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CLINICAL LECTURES

Bath.

ON

SOME OBSCURE DISEASES

OF

THE ABDOMEN

DELIVERED AT THE LONDON HOSPITAL

BY

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PREFACE.

It is the custom for each physician to the London Hospital to deliver a certain number of Clinical Lectures each year, in addition to the ordinary instruction given in the wards. As these are mostly attended by senior students, I thought it would be useful if I were to select such cases as I had myself found most difficult to diagnose or to treat. The subject of each of the following lectures, therefore, marks some difficulty I had myself experienced, or some mistake I had committed.

I have attempted to base the conclusions at which I have arrived chiefly upon cases noted in the books of the hospital, but where the numbers of these seemed to be insufficient for the purpose, I have had recourse to others that have been recorded by various authors. The post-mortem registers of the hospital were searched from the year 1839 to 1883, and every case bearing upon the subjects to be examined was carefully copied. Unfortunately, during the earlier part of this period the clinical records are very imperfect, but the symptoms and course of each case that has occurred within the last ten years, during which they have been more systematically kept, have been compared with the morbid conditions discovered after death, and the results are included in these lectures.

It will no doubt be felt by many that the description of disease has been made more difficult by the plan I have pursued of dividing the cases into different clinical groups, but unfortunately this cannot be avoided, if we wish to describe disease as it really presents itself in practice. The physician, who mentions the physical signs of a per-

forated appendix as always the same, who paints the history of perinephritic abscess from the acute form only, or who neglects the peculiarities of "miliary carcinoma," when speaking of cancer of the peritoneum, is presenting to the student not a real clinical picture, but a fancy sketch that will surely mislead him in practice.

The following lectures were, with the exception of the two last, published in the 'Lancet' at various times, under the title of "Clinical Lectures on Cases of Difficult Diagnosis," and I trust their republication as a separate work will prove useful. The brilliant success of ovarian surgery has, I think, led some to undervalue the ill effects likely to arise from operations on the peritoneum, and they look upon a careful consideration of a case of abdominal tumour as unnecessary, under the idea that an exploratory incision will safely settle all doubts respecting it. Others, on the contrary, still view with undue apprehension any operation on the abdomen, and are, in consequence, inclined to delay the adoption of measures on the prompt execution of which the life of a patient may depend. To both of these I hope these inquiries may be useful, in assisting them to define the cases in which surgical procedures are most likely to prove beneficial.

I have great pleasure in thanking my hospital colleagues who have so kindly placed the notes of their cases at my disposal. I have in each case as far as possible quoted the exact text of their records. I must also express my thanks to my son, and late House Physician, Dr. William Fenwick, who collected for me the histories and post-mortem records of all the cases recorded in the last two lectures.

29, Harley Street,
Cavendish Square;
October 14*th*, 1889.

CONTENTS.

LECTURE I.

ON PERFORATION OF THE APPENDIX VERMIFORMIS CÆCI.

Gentlemen,—When a student first enters on his hospital career he is struck with the vast variety of cases presented to him. The diseases and their modifications seem to him so innumerable, the symptoms of many of them appear so closely to resemble each other, and the distinctions he is taught to regard as important for their discrimination are often in his view so trifling, that he despairs at ever being able to overcome the difficulties connected with their diagnosis. Experience, however, soon shows him that many of the maladies he encounters are readily recognised, and that the similarity of their symptoms is generally more apparent than real, whilst careful attention to the rules laid down for his guidance will usually enable him to arrive at a tolerably correct opinion as to the nature of most of the ordinary cases presented to his notice. But there are some affections that occur so rarely that only a few instances come under the observation of the practitioner, and they are consequently apt to be overlooked or confounded with other maladies of more frequent occurrence, whilst the rules for their detection and treatment are vague or imperfect. It is some disorders of this kind that I would from time to time invite you to study with me, examining the symptoms they have presented during life, and, in such as have proved fatal, the morbid conditions discovered after death.

I propose that we should first consider some of the more obscure affections of the abdominal cavity, inasmuch as, on account of the great number of organs, differing in structure, in size, and in functions, that are enclosed in it, the diagnosis of the rarer forms of disease is more difficult in this than in the other cavities of the human body; and also because increased certainty of diagnosis is likely to lead to improvements in treatment. The remarkable success that has of late years attended the operation of ovariotomy encourages the belief that if our diagnosis could be made more certain, some of the diseases now rebellious to medicine might be relieved by surgical procedures; for there can be no doubt that many of the operations at present performed prove unsuccessful not so much from the nature of the malady or from any special liability of the injured structures to secondary inflammation, as from the late period at which they are undertaken.

I would first invite your attention to a disease of somewhat rare occurrence, which has only of late years attracted the attention of practitioners, and which often presents considerable difficulty in diagnosis, viz. perforation of the vermiform appendage. Five cases of this kind have been admitted into the hospital during the past twelve months, and I have selected two that occurred in my wards as illustrations of the symptoms and course usually presented by the malady.

Case 1.—A man, seventeen years of age, was admitted under my care on February 14th, 1884, complaining of great pain in the abdomen, accompanied by weakness, to such an extent that he was scarcely able to stand. He was very thin, with a face expressive of severe suffering, the eyes were sunken, and the skin remarkably dark around them. He referred the pain chiefly to the epigastric region, although it extended over the entire abdomen, which was tender upon the slightest pressure; he had frequent vomiting, and the bowels had been constipated during the whole period of his illness. The pulse was 108, very compressible; tongue much furred; respiration 42; temperature 99·8°. The abdomen was greatly distended and tympanitic, but the loins and flanks were not distended, and there were no visible movements of the intestines. The hypogastric region was dull on percussion; over the cæcum the note was

less dull, and percussion upon this part gave rise to a gurgling sound. On examination by the rectum a mass could be discovered in front, which was smooth, and gave the impression of its consisting of several coils of intestine united together. He stated that he had always enjoyed good health until nine weeks ago, when he thought he had injured himself by lifting a heavy roll of paper; since that time he had lost flesh, but had been free from pain, or any other symptom. Seven days ago he was suddenly attacked with severe pain of the epigastrium shortly after supper, and the pain had continued ever since, in spite of medical treatment. Perforation of the appendix was diagnosed, and he was ordered frequent and full doses of opium. During the next three days he seemed somewhat easier, the vomiting was less frequent, and the abdomen became less distended. The temperature sank on the second day to the normal point, and on the two subsequent days it was 97° and 97·6°. The physical signs remained unaltered, excepting that there was more fulness over the region of the cæcum, but the pulse became gradually more feeble, and he died on the tenth day of his illness.

Post-mortem examination.—A considerable quantity of pus escaped when the abdomen was laid open, and the intestines were seen to be everywhere adherent to each other, pus being situated between the adjacent coils. The part where the gurgling had been elicited by percussion was occupied by a fold of small intestine, bent upon itself, filled with air and fluid, and lying upon the cæcum, whilst the tumour felt through the rectum proved to consist of some coils of intestine united together and enclosing collections of pus, and adhering by recent lymph to the back of the bladder and the sides of the pelvis. There was also a considerable quantity of free pus in the pelvis. The appendix was extremely congested, the tip being of a purplish colour and much thickened; its sides at the lower third were covered with pus and lymph, and a concretion was felt impacted in its upper third, whilst between this and the tip was an ulcerated opening. The cæcum itself was congested, and contained only a few small pieces of fæces and bits of gelatinous-looking matter.

Case 2.—A man, aged fifty, was admitted, complaining of pain in the chest and abdomen. He was emaciated, sat upright in bed without any drawing up of the legs, and stated that the pain from which he suffered was not severe; the tongue was furred, there was no vomiting but frequent hiccough, the bowels were greatly relaxed, and he was unable to swallow solid food; the pulse was not much quickened, and his temperature was only 97·5°. Although so little complaint was made of pain, the hypogastrium was tender on pressure and slightly swollen, it was comparatively dull on percussion, and percussion over the right iliac fossa elicited a gurgling sound, as of air and fluid. He made no complaint of cough or expectoration, but there was dulness on percussion over the right supraspinous fossa along with tubular respiration and in-

creased tactile fremitus above and below the right clavicle. He had been a soldier and served in the Crimea and East Indies, and had formerly suffered from dysentery. Six months ago he first had pains of the chest and abdomen, which had been at times so severe that he was unable to follow his employment of a labourer. He could not fix any time when the pain of the abdomen became worse, but five days before his admission he suffered from constant vomiting, which gradually subsided. During his residence in the hospital he never complained of much pain, but suffered greatly from diarrhœa, the bowels being relaxed as often as ten or twelve times in the twenty-four hours. His temperature was below the normal point, excepting on one occasion, when it reached 99°. He gradually died from exhaustion seven days after his admission, the physical signs remaining unaltered.

Post-mortem examination.—There was fibroid consolidation at the apex of each lung. On the right side was a cavity, and the middle and lower lobes of each lung contained tubercles, but there were no tubercles on the peritoneum and no ulceration of the small intestines or the cæcum. The small intestines were adherent to each other in the hypogastric region, with pus situated between the adjoining coils, whilst a collection of pus presented itself in the pelvis, walled in by recent lymph and coils of intestine adhering to each other. The vermiform appendage was perforated by an ulcer, which communicated with the abscess, but no concretion could be found. The part where the gurgling had been heard on percussion was occupied by a loop of small intestine, situated over the cæcum and adherent by recent lymph to the adjoining parts.

Now, it is scarcely necessary for me to point out to any of you who have attentively listened to the narrative of these two cases how remarkably they differ, although in each there was the same lesion of the vermiform appendage and the same local inflammation resulting from it. In the former case general peritonitis had existed from the first; the symptoms were ushered in by sudden and intense pain, vomiting, and constipation, whilst in the latter the inflammation was confined to the part at which it had commenced, and the pain was never severe; the patient was, in fact, unable to fix the date of the beginning of his illness, and severe diarrhœa was the prominent symptom. But what we shall hereafter find was of great importance, was that in the first case the disease occurred in a person previously healthy, and resulted from the irritation set up by a concretion; whilst in the second it took place in one who was suffering from long-standing phthisis.

From the fact of five cases of this kind having been admitted into this hospital within the last twelve months, you might infer that perforation of the appendix is by no means uncommon, but such is certainly not the case. During the last eight years only nine persons have come under my own care in whom this lesion was either proved to be present by post-mortem examination, or in whom the symptoms were so well marked that the diagnosis could be made with tolerable certainty.

On carefully examining the post-mortem records of the London Hospital during the last forty years I have only been able to find nineteen cases in which the appendix was found to be in a diseased condition. It is quite certain, however, that this number cannot duly represent all who have died in the hospital during so long a period of this disorder, for in the earlier volumes only one or two instances are recorded.* It is evident, then, that the experience of a single practitioner will not be sufficient to furnish him with instances of all the varieties the malady may present, and I have therefore collected 129 cases that have been published by different authors, in the hope that from a careful study of so large a number we may be able to clear up some of the difficulties connected with the subject.

Of the whole number of cases collected, only ninety-five have been recorded with sufficient details to enable us to ascertain the exact results of the perforation of the appendix, and of this number thirty-eight presented a localised collection of pus. Sixteen of these are said to have had an abscess in the neighbourhood of the appendix, and in all probability the condition was similar to what has been described in the two cases before quoted, where one

Results of perforation of appendix.
1. Collection of pus
a. about appendix.

* Since the publication of this lecture I have seen so many cases of this disease in both public and private practice that I can only conclude that in many of those recorded in our books as "peritonitis" the perforation of the appendix that produced it had been overlooked. An excellent paper containing an analysis of 250 cases has been published by Dr. Fitz in vol. i of the 'Transactions of the Association of American Physicians.'

or more coils of the small intestine were united with the neighbouring parts and walled in the pus, or where the pus was situated in the pelvis and was surrounded by newly-formed lymph. In twelve cases the pus was situated in the iliac fossa, in some around the cæcum, in some below the fascia, the muscular fibres being softened or broken up. A few instances are mentioned in which the pus had burrowed beneath the peritoneum and had formed a huge abscess around the right kidney; in six the presence of an abscess is noticed, but its locality is not defined.

But you may naturally ask why in cases of perforation of the appendix the inflammation of the peritoneum is so often localised, whilst in perforation of the stomach or small intestines such a condition rarely occurs.

No doubt the difference chiefly depends upon the nature and amount of the material that is extravasated into the peritoneal cavity. In perforation of the stomach a large quantity of a highly irritating fluid is suddenly effused, which quickly finds its way to all parts of the abdominal cavity, exciting inflammation wherever it reaches, whilst in the case of the appendix the material is solid or in a small amount, and being in the most depending part, it does not at once reach the more distant portions of the peritoneum. We consequently find that, even when no abscess has been produced, it is mentioned that the inflammatory products were met with in the greatest quantity in the immediate vicinity of the cæcum, in the proportion of twenty-three cases out of ninety-five. It is easy to understand why only lymph should be found in one case and a collection of pus in another, for death probably occurred so rapidly in the former that there had not been sufficient time for the suppurative process to take place; but it is more difficult to explain how the abscess should be confined in one individual to the pelvis and in another to the iliac fossa.

The most probable reason is that as the length and direction of the appendix vary in different subjects, so the

seat of the inflammation must vary accordingly, being the most intense in the part nearest to the perforation.

When, for example, the free end of the appendix is the seat of the ulceration, and it projects downwards towards the pelvis, the abscess will be situated in the hypogastrium or in the pelvis, but where it is very short or placed behind the cæcum, or the perforation takes place near its origin, the structures in or around the iliac fossa will be mainly implicated.

Another circumstance that must tend to determine the position of the abscess is the formation of adhesions between the appendix and the neighbouring organs, which is recorded in ten cases out of the ninety-five. The cæcum, small intestines, peritoneum, and bladder were the organs to which the appendix was usually attached, and in some instances the adhesion had evidently occurred some time before the perforation had taken place.

Various cases are on record where the appendix had become adherent to the inguinal canal, or had formed part of the contents of a hernial sac, and the pus had presented itself in the scrotum and been successfully evacuated.

It is evident that an abscess in the peritoneal cavity will usually set up so much constitutional irritation that death will ensue before it can be evacuated, but such is not always the case. In a case that occurred at this hospital the pus was evacuated through the abdominal walls, and I have seen a similar instance in my own practice. When it is situated near the cæcum it may burrow beneath Poupart's ligament, and may present itself in the thigh, as occurred in a boy who was under my care in the hospital two years ago; he perfectly recovered after pus and fæces had been discharged from the wound. Other cases are recorded in which the pus had found its way into the cæcum, the ileum, or the rectum, and thus relieved the patient from imminent danger.

Of the whole number I have collected only one is mentioned in which pus was found in the abdominal veins, one in which abscess of the liver was present, five where

pleurisy, and two in which pneumonia was discovered after death. It is doubtful whether we should not refer the pleurisy in these cases to the extension of the inflammation of the peritoneum through the diaphragm, but the others were most likely the results of the absorption of pus.

When we remember how commonly pyæmia takes place in deep abscesses of the limbs we cannot but be surprised at the small number of cases recorded as following perforation of the appendix, but the explanation is not difficult. In the limbs large veins are numerous in the vicinity of an inflamed part; in peritoneal abscess the pus is walled in by adhesions, and the surfaces of the vessels are coated with lymph. In like manner we can see why abscess of the liver is so common a result of dysentery and so unusual in peritoneal abscess; in the former the irritating and decomposing contents of the intestines are brought into immediate contact with the vessels laid bare by the sloughing of the mucous membrane; in the latter the pus is defended by a layer of lymph from immediate contact with the vascular system. But in the more unusual situations of abscess resulting from perforation of the appendix, such as where the muscular tissue of the iliac fossa or of the loins is the seat of the suppuration, we will probably find that pyæmia is as apt to occur as when abscess is present in other parts of the body.

Although the inflammation, as we have before seen, chiefly affects the lower part of the abdominal cavity, fifty-nine cases are recorded out of ninety-five in which the whole peritoneal sac was inflamed, and, judging from my own experience, I should be inclined to estimate the proportion much higher. Of course the amount of mischief varies greatly; in some cases the intestines are everywhere adherent, and collections of pus are met with in the most dependent parts, or are enclosed between the adjacent coils, in others lymph is uniformly spread over the surface of the membrane, whilst more rarely we only meet with slight evidences of inflammation.

General peritonitis occasionally presents itself as the first indication of the perforation, in other cases the inflammation travels slowly from the neighbourhood of the appendix, whilst more rarely it results from the bursting into the abdominal cavity of an abscess set up around the appendix, and which had been at first circumscribed by adhesions of the neighbouring structures. But at whatever period of the case the inflammation of the peritoneum may occur, it is usually of a suppurative character, a peculiarity which in all probability arises from the decomposing nature of the substance which has originated the morbid action.

When this accident first attracted the attention of pathologists it was remarked that the appendix often contained a foreign body, and the idea arose that this was the sole cause of the perforation. Out of 120 cases which I was able to examine as regards this point, in fifty-five it was stated that either a concretion, a mass of fæces, or some other foreign body was present, and it is fair to conclude that the numbers would have been larger if a sufficiently careful search had been practised in them all; for as the contents of the appendix often drop into the pus surrounding the ulceration, it is easy to understand that a small concretion may frequently have been overlooked. The nature of the foreign body varied greatly, for in forty-seven cases sufficiently detailed to allow of analysis twenty-eight were concretions, fourteen consisted only of hardened fæces, and in five others substances such as seeds or shell were present.

But why should a foreign body in this part set up such serious results, when we know that in numerous instances the appendix has been found on post-mortem examination to be occupied by shots, seeds, and even, as in a case lately observed in this hospital, by lumbrici, without any ill-effects, and when we so constantly meet with concretions in the kidney and the gall-bladder without any manifestations of disease having arisen from their presence? I think in most cases the presence of a concretion by its irritation gives rise to ulceration, and the proximity of the

part to the cæcum filled with decomposing materials tends to produce sloughing in what would otherwise remain a mere abrasion of the mucous surface. In support of this view I may mention that in sixteen cases the appendix is stated to have been in a gangrenous condition, although there is no notice in any of them of the cæcum being in a similar state. I think, too, we may find in the anatomical relations of the appendix a reason why in some instances perforation so readily occurs. In Case 1 you will remark that the ulceration had taken place in the centre of the process, where it was distended by the concretion, but the perforation was at the end. Now, the appendix is supplied with blood by means of a small mesentery of its own, which sometimes terminates before the extremity of the process, so that the end must derive its nutriment from the blood-vessels of the parts nearer to the cæcum, and under such conditions any acute inflammation or ulceration that obstructs the circulation must tend to rapid disorganisation of the structures. That this is by no means an uncommon cause of the perforation is shown by the fact that in the majority of cases the perforation is found at the extremity, and very rarely near to the cæcum.

Then how are the concretions produced? It has been generally assumed that they are the result of a secretion of the phosphates of lime and soda, of which they principally are composed, by the mucous membrane of the appendix, small nodules of fæces or some undigested particles of food which had obtained access to the parts serving as nuclei. This is no doubt correct in many instances, as nuclei of this nature have been shown to exist in some concretions, but in others the calculus appears to be composed solely of earthy salts. Now, in one of the cases at this hospital it is noted that the appendix was distended by a milky fluid, the communication with the cæcum being obliterated, and in others recorded by different authors the appendix is stated to have been occupied by a substance resembling putty. It is, then, to obliteration of the valve, and consequent distension of the appendix with thickened

secretions, that I suspect we must look not only for an explanation of the formation of many of the concretions, but also for the cause of some of the ulcerations that occur in which no foreign body can be discovered after death.

The second case I have narrated was one in which phthisis was present, and no concretion was discovered; and we might have conjectured that perforation would often occur under such circumstances, on account of the similarity of the structure of the mucous membrane of the appendix to that of the cæcum, which is liable to suffer from ulceration in this disorder. It is, however, much more rare for perforation to arise from tubercular ulceration than from the presence of a concretion, as I have only met with thirteen cases out of ninety-eight. Occasionally perforation of the appendix occurs in typhoid fever, but I have only found six in which it took place in persons suffering from this disorder. Two cases have been recorded in which it happened during convalescence from other eruptive diseases, but there is no evidence that there was any connection between the original malady and the abdominal complication.

It has been remarked by different writers that perforation of the appendix is much more liable to affect the male than the other sex, and this is borne out by the experience of this hospital, where of seventeen whose ages were recorded only three, or 18 per cent., were females, whilst of 105 cases collected from various authors only twenty-five, or 23 per cent., were of this sex. The proportion varies with the cause producing the perforation, for in the cases occurring in phthisical individuals 41 per cent. were females, and all of those that took place in the course of typhoid fever whose sex is mentioned were also females. When no foreign body was found in the appendix the proportion of females was 23 per cent., but amongst those in which a concretion or other foreign body was discovered after death there was only 17 per cent.

It is evident from both sexes being equally liable to perforation in those affected with phthisis that there is no

anatomical difference in structure which can account for the smaller proportion of females who suffer from it in other cases, so that we must seek for an explanation of the greater liability of the males in their habits or circumstances. Now, it has been conjectured that the male is more liable to affections of the appendix on account of the more severe exertions to which he is exposed; in support of this we may remark that in the first case the patient stated he had never been well since a strain received in his occupation, whilst other instances are recorded in which the fatal illness had been preceded by an injury to the abdomen. But, on the other hand, the history of an injury is only exceptional, and in the majority of cases the symptoms of the disease present themselves suddenly and without apparent cause. In addition to this, as we shall shortly see, the accident occurs more often in the young than in those at a later period of life, when severe labour is more generally undertaken.

You will remember that I before suggested that many cases arose from obstruction of the valve, probably the result of catarrh, and this derives support from the fact that males are more liable to catarrhal affections of the cæcum than the opposite sex; for example, the number of cases of typhlitis admitted into this hospital for the last seven years has been fifty-nine, of whom only eighteen were females, which is at the rate of 30 per cent.

Let us now examine whether we can find any predisposing cause of ulceration of the appendix in the age of the persons affected. I have included all the cases whose ages are stated in the following Table :—

Years of age.	Number of cases.
Under 10	9
10 to 20	29
20 to 30	21
30 to 40	16
Above 40	22
Total	97

It will be remarked that a considerable number have occurred under ten years of age, and half of these were under five; indeed, the accident sometimes takes place at the earliest period of life. From ten to twenty is, however, the most usual time, and after thirty the numbers gradually decline. This is better seen if we divide the cases according to the cause producing the ulceration. Thus, if we examine only those in which either a concretion or some other foreign body was discovered, we find that thirty cases out of forty-three, or 70 per cent., occurred in those under twenty years of age, only four between twenty and thirty, and five between thirty and forty. If we separate those in which concretions were present from those where only particles of hardened fæces or other foreign bodies were discovered, the same liability is shown, as 64 per cent. of the latter and 80 per cent. of the former occurred under twenty years of age.

But we saw in the former Table that a considerable number of cases of ulceration of the appendix occurred in persons above twenty, and it is chiefly in those above this age in whom no foreign body is discovered.

In the next Table I have included all the cases of typhlitis who have recovered and who were admitted into this hospital in the years before mentioned.

Years of age.	Number of cases.
5 to 10	2
10 to 20	24
20 to 30	25
30 to 40	2
40 to 50	5
Above 50	1
Total	59

It will be seen, on comparing these Tables, that both ulceration of the appendix and inflammation of the cæcum are most liable to occur between the ages of ten and thirty, when food is consumed in the largest quantity, and we may therefore conclude that both affections depend upon

a similar condition, and that this condition is most probably the retention of indigestible materials in the cæcum and the catarrh arising from it. But as typhlitis and ulceration of the appendix are both of them frequent between the ages of twenty and thirty, although concretions are less common at that period than in the ten years before it, we are justified in supposing that a catarrhal condition of the cæcum, either by producing closure of the valve or by the propagation of the inflammation to the appendix, often gives rise to ulceration, although no foreign body is present.

Most of the cases of ulcerated appendix in phthisical subjects occur at a later period of life than when it is due to the presence of concretions, for out of those I have collected only one was below twenty years of age, seven were between twenty and forty, and three were above forty. All those connected with hernia were above forty years of age.

I have already mentioned the prevalent idea that the nuclei of the concretions so often found in the appendix are always either hardened fæces, or the indigestible materials of the food, and if such were the case we should expect to find that most of the sufferers had been liable to constipation. I have collected forty-three cases in which the previous state of the health is recorded, and of these only three had been subject to a constipated state of the bowels. It is therefore evident that this theory derives but little support from facts, and I am inclined, as I said before, to believe that the concretions are in most instances the result of an excessive secretion of the mucous membrane of the appendix arising from the stimulus afforded by an undue use of indigestible food. This view derives support from the fact that of twenty-five cases in which a concretion was discovered twenty are described as having previously enjoyed robust health, and only three had been delicate; whereas of eight in which no concretion was found, five had been healthy and three had been delicate.

The presence of a concretion produces no pain until catarrh or ulceration is excited, for out of twenty-five cases of this kind only two had previously complained of abdominal pains, whilst of eighteen in which no concretion is recorded five, or 30 per cent., had suffered in this way.

I have before mentioned that injuries to the abdomen are supposed by some authors to give rise to ulceration of the appendix, and this derives some support from the fact that three cases out of eighteen in which no concretion was discovered referred their complaint to blows or strains.

In four instances out of forty there was a history of a previous attack of typhlitis from which the patient had perfectly recovered; two of these died from peritonitis only, and in the remaining two both abscess and peritonitis were discovered after death.

It will be remembered that there was a considerable difference in the symptoms in the two cases which occurred in our wards, and which I have selected for our consideration. In the first the patient was suddenly attacked with severe pain of the abdomen, which continued until death; whilst in the second scarcely any pain was complained of, and diarrhœa formed the first and the prominent symptom throughout. Then it must be also borne in mind that the perforation occurred in the former case whilst the patient was in perfect health; in the latter it presented itself in a person labouring under chronic phthisis. Now, this distinction holds good when large numbers of cases are examined. I have collected eighty-five cases in which the first symptoms are recorded, and of these sixty-three, or 73 per cent., complained of abdominal pain as having ushered in their illness. The onset of the pain was in almost every case sudden; in thirty-two it was referred to the abdomen generally, and in twenty-one it was located in the right iliac fossa or in the hypochondrium. According to my own experience, where abscess only is the result of the perforation the pain is at first confined to the lower

portion of the abdomen, and is often of a colicky character; but when general peritonitis is developed from the first the pain is more severe and more generally diffused.

In one case the symptoms are recorded as those of "gravel," and I have myself seen frequent and painful micturition form the earliest indication. In two instances the more dangerous symptoms were preceded by tenesmus. In eight well-marked rigors preceded the pain, but this symptom has not fallen under my own notice.

Vomiting is recorded as being present in the commencement of the illness in eighteen, having generally shown itself immediately after the pain. Collapse is only noticed in four, showing a striking contrast to the frequency with which it presents itself in perforation of other parts of the gastro-intestinal canal.

Constipation was only noticed in eight cases as a primary symptom, probably because the accident so frequently occurs in persons in good health, and in whom the action of the bowels has been regular. Diarrhœa was noticed in nine out of eighty-five, but in almost every case the patient was suffering from phthisis, from typhoid, or some other eruptive disorder. In two cases the initial symptoms were so obscure that they are stated to have resembled typhoid fever.

If we look at the above figures, we shall see that the most general symptom that ushers in the illness in a person previously healthy is a sudden and severe pain of the abdomen or of the right iliac region, generally attended by vomiting, and in some cases by rigors; but that where it occurs in those suffering from phthisis or typhoid, pain is often slight or altogether absent, and diarrhœa is then the prominent initial symptom.

We found that perforation of the appendix was capable of producing very different effects according as it produced adhesions between the injured part and some of the neighbouring organs, or gave rise to general peritonitis or to localised abscess; and it is evident that the symptoms which present themselves during the life of the patient

will vary according to the pathological conditions that may have arisen. We must therefore, in order to obtain an accurate clinical picture of the disease, examine cases of each kind by themselves as far as it is possible to do so.

First, let us look at the symptoms that present themselves in cases that terminate by adhesion.

Case 3.—A man, thirty years of age, was admitted under my care complaining of severe pain in the right iliac region, increased on pressure, vomiting, and obstinate constipation. Four years before he had a similar attack, and was ill for three months, but he perfectly recovered, and remained well until two days previous to his admission, when he exerted himself at a game of cricket. On reaching home he began to vomit, and pain of the right side suddenly attacked him. The man died, and we could not obtain a post-mortem; but there seems little doubt from the symptoms and physical signs that he had perforation of the appendix, and that by severe exertion of the abdominal muscles he had ruptured some old adhesions, and thus induced peritonitis.

There are some similar cases on record, in which rupture of adhesions of the appendix were proved by examination after death to have taken place, and the previous illness had been described as "typhlitis;" so that in all probability the symptoms that present themselves in the cases that terminate in this favorable manner cannot be distinguished from those of inflammation of the cæcum. The occasional occurrence, however, of such cases should lead us to warn patients not to subject themselves to undue exertion for some time after any severe attack of inflammation in this region.

Whenever general peritonitis is excited the symptoms indicative of that condition present themselves, but in many cases they are considerably modified, as in other cases of suppurative inflammation of a serous membrane. Thus it is not unusual for the pain to lessen for a day or two, and the patient to express considerable relief, although the disease may be progressing. In some instances, probably from the appendix becoming surrounded with lymph, the patient appears to be convalescent, when he is again suddenly prostrated by an accession of inflammation, in-

duced, we may suppose, by an escape of a portion of the inflammatory products into the peritoneal cavity. A case of this kind came under my notice a short time ago; a gentleman suffered from the usual symptoms and physical signs of perforation of the appendix, from which he gradually recovered; but when apparently convalescent he was again attacked by symptoms of peritonitis, and rapidly sank.

Tenderness on pressure is experienced over the whole abdomen, but is always most severe in the right iliac or the hypogastric region. This is the case even when the pain is chiefly referred to the epigastrium, or near the umbilicus, and it often affords a clue to the real seat of the mischief, as in the following instance:

Case 4.—A sailor was suddenly attacked with pain in the epigastrium, followed by vomiting, and when admitted under my care he presented the ordinary symptoms of acute peritonitis; but although the abdomen was everywhere tense and tender, it was chiefly so in the region of the cæcum, and after death we found he had perforation of the appendix.

The pain in many instances radiates downwards, and in five out of sixty-two cases it was chiefly experienced in the right thigh; and in one case it is said to have been felt near the anus. Vomiting generally occurs, and often at an early period; but, it is, I think, more readily kept in check by opium than when it accompanies peritonitis arising from other causes. As a rule, constipation is present but can be relieved by the use of enemata; in twelve cases out of sixty-two diarrhœa was a prominent symptom. You must here bear in mind that we are now speaking of peritonitis produced by perforation in persons previously healthy, for, as we shall shortly see, severe diarrhœa almost always accompanies the disease when it occurs in phthisical individuals.

The pulse is usually quick from the first, and remains so, even if the other symptoms seem to be ameliorated. It is worthy also of remark that the temperature is rarely very high, even in non-phthisical cases; and I have known this coolness of the skin lead practitioners to doubt if the

case was such a dangerous one as it otherwise appeared. In the last four cases that have occurred at this hospital the temperature varied,—in one case from 100° to 101°, in the second from 97·6° to 99·8°, in the third from 98° to 99·6°, and in the fourth from 97·5° to 99°. Now, it must be remembered that the disease occurs for the most part in young persons, in whom we should expect any serious inflammation to light up very high fever, and you must be therefore on your guard against allowing the coolness of the surface to mislead you as to the gravity of the case. Death always takes place from exhaustion, and is not unfrequently preceded by delirium.

III. Cases ending in abscess

When an abscess only results from the perforation of the appendix the progress of the disease, as well as its duration, greatly differs from those in which it is followed by general peritonitis. We shall see this best by contrasting the following case with those previously related.

Case 5.—A man, aged twenty, was admitted into my wards complaining of severe pain and swelling of the right side of the abdomen. Six weeks before, when at Newcastle, he was suddenly attacked with pain in the right side, which was at first slight but gradually increased to such an extent as to compel him to leave his work. Shortly afterwards he noticed a swelling in the right iliac region, which became very hard and increased in size in proportion as the pain became more severe. On examination, a large area of dulness could be made out by percussion occupying nearly the whole of the right side of the abdomen, a swelling also presenting itself in the right lumbar region; it was very tender on pressure, but no fluctuation could be discovered. The temperature was 102·8°; the pulse 136; tongue dry and furred; appetite bad; bowels confined. Four days afterwards he is reported to have been much worse, was in great pain, perspired freely, and the temperature was 101·5°. On the sixth day he was only semi-conscious. Temperature 100°; abdomen greatly distended, and the following morning he died. On post-mortem examination the appendix was found to have been perforated and communicated with a large abscess. General peritonitis was also present, but seemed to be of recent occurrence.

You will be at once struck with the slow progress of this case as compared with those in which peritonitis had immediately followed the perforation, and you will observe that, on account of its longer duration, there was a more

progress slow.

distinct appearance of tumour during life than in the two cases formerly quoted. Of sixteen of the cases I have collected in which an abscess only was present, the existence of a well-marked tumour is mentioned in 40 per cent., but in only 20 per cent. could fluctuation be discovered, and in only six of the sixteen was pain in the abdomen a prominent cause of complaint. We found constipation was generally present where general peritonitis had occurred; but when there is abscess alone diarrhœa is more common, five out of the sixteen having suffered severely from it.

In the case just quoted peritonitis eventually took place, but in other instances a more favourable result is observed, on account of the abscess bursting externally, or into some of the neighbouring organs. I have before mentioned a case admitted into my wards three years ago, in which an abscess formed on the right thigh, and fæces were evacuated when an opening was made into it; others are recorded in which pus was discharged into the cæcum or into the rectum, as occurred a few years ago in a person admitted into this hospital. In the following case a communication had probably taken place between the appendix and the vagina.

Case 6.—A lady, about thirty years of age, consulted me on account of very severe attacks of colic, and on examining the abdomen a large scar was observed over the cæcum, and from the bulging below the integuments they seemed to be adherent to the large intestine. She stated that at the age of twelve she had been suddenly attacked with pain in the right iliac region, which confined her to bed for many months, and which was eventually relieved by the bursting of a large abscess on the site occupied by the scar. Since that period she had also observed a slight discharge of a brown colour from the vagina, and occasionally small seeds presented themselves in it. On examination a minute opening was detected in the upper part of the posterior wall of the vagina, and small particles, evidently of a feculent character, were found. She was relieved of the colic by careful regulation of the bowels, and the opening into the vagina was permanently closed by the application of the galvanic cautery.

It will be remarked that the second case I quoted differed considerably from the first in the very slight amount of pain, the depression of the temperature and the

persistence of severe diarrhœa, and that the patient was suffering from chronic phthisis when attacked by the perforation. If, therefore, we wish to obtain an accurate clinical picture of the disease, we must consider such cases separately, for we shall find that in the invasion and the symptoms they are essentially different from those occurring in healthy individuals.

I have collected eight cases of phthisis in which this accident occurred, and in six persistent diarrhœa is mentioned as the prominent symptom. In one there was no suspicion during life that perforation had taken place, in three it is expressly remarked that pain was not complained of, and in three a certain amount of pain was experienced in the lower part of the abdomen, but it was not severe. Tenderness of the hypogastric region is only mentioned in one case. No mention is made of the temperature in any of the above cases, but in Case 2 it will be observed that it was generally below the normal point. The question naturally occurs, Why should there be this difference between the symptoms of the same disease occurring in a phthisical and a healthy individual? In the first place, we must remember that in the former the perforation is produced only by an ulceration, and that therefore no concretion or decomposing material is suddenly introduced into the cavity of the peritoneum, so that time is given for the localisation of the mischief by adhesions to the surrounding structures; and in the second place acute inflammation is not so readily lighted up in a person whose strength is reduced by long illness as in one who is in a robust state of health.

With the exception of the few cases in which the appendix becomes adherent, or in which the abscess is discharged into some of the neighbouring organs or bursts externally, death almost always results from perforation of the appendix; but the duration of the disease varies greatly according to the pathological conditions that have been produced by it. Thus of fifty-seven cases the date of whose deaths is recorded, forty, or 70 per cent., died within

the first week of illness; eight died in the second week, three in the third week, and the remainder lingered from nine to twenty-one weeks. As regards the deaths in the first week, four died within twenty-four hours of the perforation taking place, six on the second day, four on the third day, five on the fourth, three on the fifth, eleven on the sixth, and seven on the seventh day. All the deaths that occurred in the first week were from peritonitis; in the second week four died out of ten cases with abscess only, two died of abscess in the third week, one in the tenth week, and three lived more than thirteen weeks, and eventually died with abscess unaccompanied by peritonitis.

You will find that the physical signs differ according to the situation of the inflammatory action. In one case they point to the presence of pus, bounded by adherent loops of intestine in the lower part of the abdomen or in the pelvis, in another to its existence in the connective tissue of the right loin, and in a third to a considerable abscess confined to the iliac fossa. In the first case the abscess is in the peritoneum, and therefore general peritonitis is usually present from the commencement; in the two latter general inflammation of the peritoneum does not necessarily occur unless the abscess should burst into the cavity of the serous membrane.

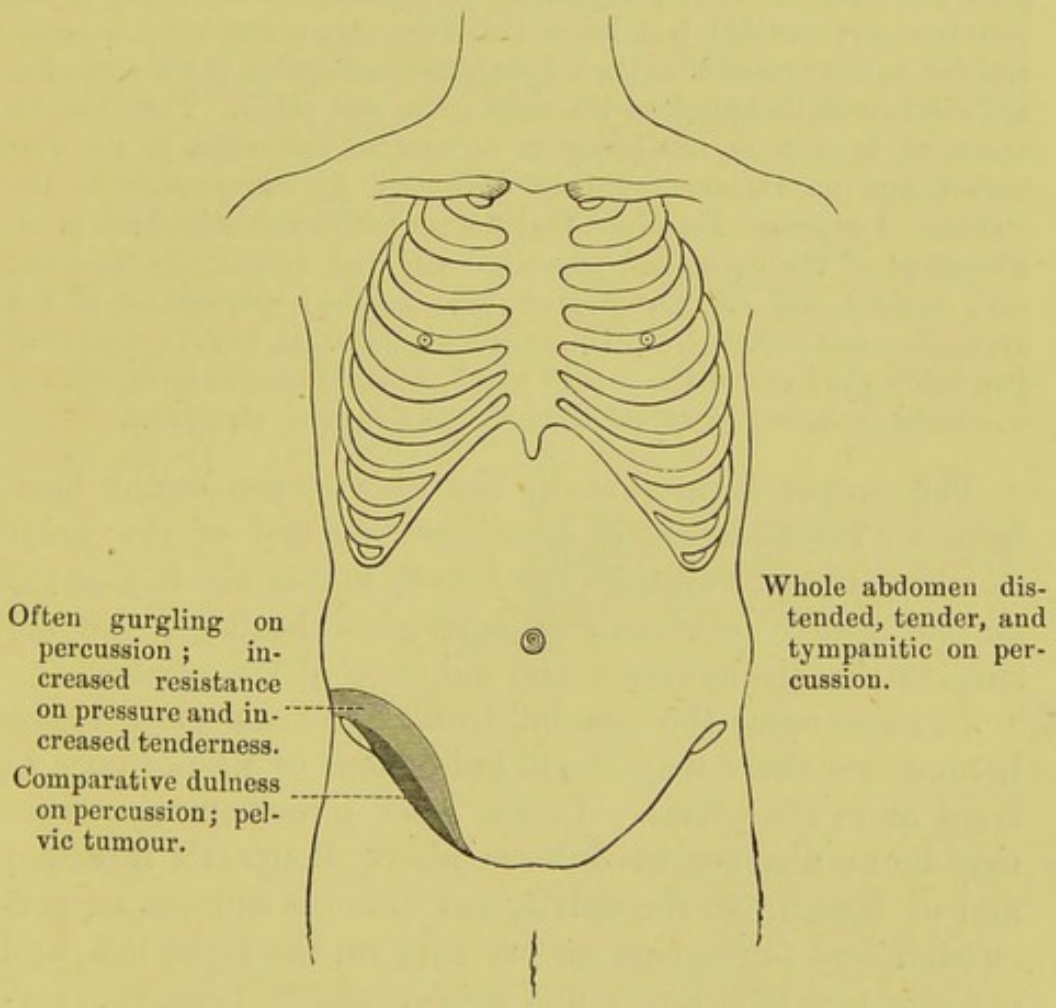
3 Classes of cases & different physical signs

In the first class of cases, where the suppuration is limited, as in Cases 1 and 2, to the lower part of the iliac fossa and the pelvis, general peritonitis being also usually present, the whole abdomen is distended, tympanitic, and very tender on percussion. Immediately above Poupart's ligament on the right side there is more resistance to pressure than in the rest of the abdomen, and although there is no distinct elongated tumour, as in ordinary typhlitis, the locality is more tender, and careful percussion affords a less tympanitic note than in the adjoining parts. The comparative dulness persists in every situation in which the patient may be placed, proving that it does not arise from fluid free in the peritoneal cavity. In some instances percussion produces a gurgling sound,

1st Class Suppuration in pelvis & lower iliac fossa & general peritonitis

which in Case 1 was proved to have arisen from air and fluid contained in a loop of small intestine lying in front of the cæcum. On examination by the rectum you can generally make out an elastic mass on the right side of the pelvis, which is very tender on pressure, and is produced

FIG. 1.—Diagram of physical signs in some cases of perforation of the appendix.



by the matting together of coils of intestine enclosing a collection of pus (see Fig. 1). You must not, however, expect to find fluctuation, either externally or internally, as the pus is situated deeply behind the intestine.

These signs are, as you will observe, very slight, and it requires considerable courage from such indications to

diagnose such a serious malady, but occasionally even these indications are absent, and the disease may be entirely overlooked. The following case, which occurred lately in my wards, is a good illustration of the difficulties you may sometimes meet with.

Case 7.—A boy about fifteen years of age was admitted into my wards complaining of severe pain of the abdomen, which two days previously had suddenly attacked him. The whole abdomen was distended, tympanitic, and very tender on pressure, but he referred the chief seat of his pain to a part situated just below the liver. On account of his youth and the suddenness of the attack I suspected perforation of the appendix, and most carefully examined the right groin and pelvis. There was no increased tension or tenderness or dulness on percussion in the iliac region, and no tumour could be discovered by examination by the rectum. I supposed, therefore, that the peritonitis had originated in an ulceration of the colon, and prescribed rest and opium. He, however, sank rapidly, and on post-mortem examination a perforation of the appendix was discovered, but the cæcum was displaced, so as to be situated just below the liver, at the part to which the chief pain was referred, and was there connected by adhesions to the neighbouring structures.

The proper treatment in the above case would have been for the abdomen to have been opened at the point at which the perforation was found, but as the boy stated he had always previously enjoyed good health, I did not suspect the displacement and adhesion of the cæcum.

2nd Class
Pus in filtrating C.T. behind Cæcum. perhaps none in front.
Dulness elt in Rt Groin.

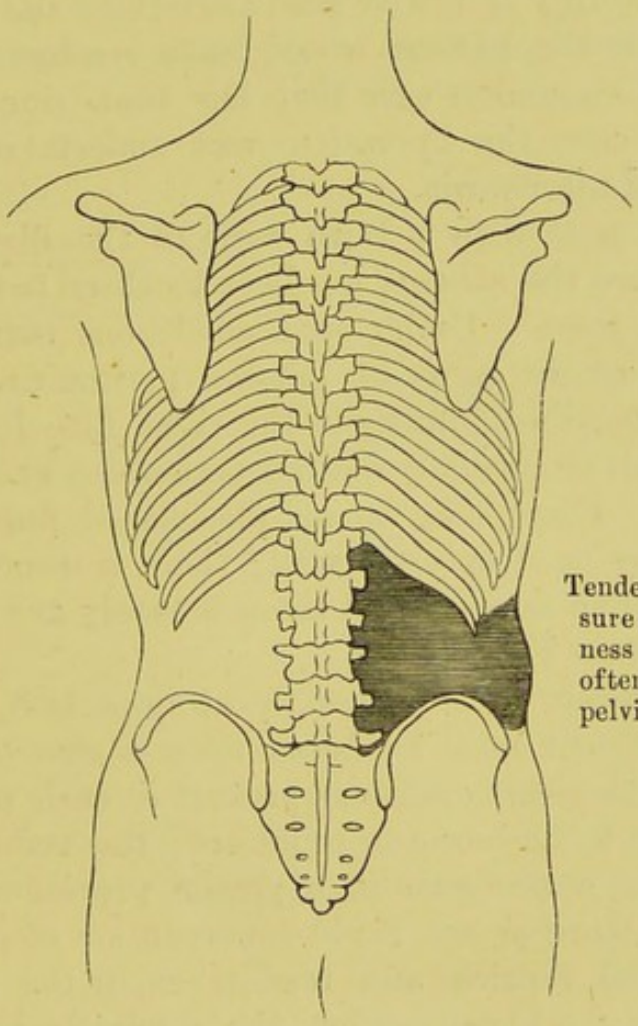
In some cases the pus infiltrates the connective tissue behind and there may be no indications of its presence in front or in the pelvis. Under these circumstances there may be an absence of dulness above Poupart's ligament and of tumour in the pelvis, but there is dulness on percussion and tenderness on pressure on the right loin, and sometimes a gurgling sound on percussion from the presence of air and fluid. The pus may also burrow down into the scrotum and thus afford the appearance of testitis (see Fig. 2).

The following case presented all these conditions, and was one of very difficult diagnosis.

Case 8.—A foreign sailor was admitted into my wards on account of pain of the abdomen. He could not speak a word of English, so that we

could not obtain any information as to the history of his disease, excepting that he had only been ill for a few days. The whole abdomen was tense, tender, and tympanitic, but there was no dulness above Poupart's ligament, and no tumour could be discovered in the pelvis. On turning him

FIG. 2.—Diagram of physical signs in some cases of perforation of the appendix.



Tenderness on pressure; swelling; dulness on percussion, often gurgle; no pelvic tumour.

over on his face we found the right loin tender and dull on percussion from the ilium up to the lower border of the liver and percussion afforded a gurgling sound. The scrotum of the right side was much swollen and tender. The temperature was somewhat above the normal, the pulse quick and small, and he was evidently very ill. He sank in a few days, and on post-mortem examination we found the connective tissue of the right loin infiltrated with pus intermixed with fetid gas; the pus had burrowed downwards into the scrotum, the peritoneum was extensively inflamed, and the cause of all the mischief was discovered to be a perforation of the appendix.

I felt convinced, from the dulness and gurgling in the loin, that a perforation of the appendix had taken place, but the inability of the patient to explain his sufferings, and the absence of a history of the illness, threw considerable doubt on the diagnosis. Consequently on a consultation an operation was not looked upon as justifiable, and in all probability if it had been performed the exhausted condition of the patient would have rendered it unsuccessful. In a similar case that has been since admitted under my care the operation was undertaken but the patient died afterwards.

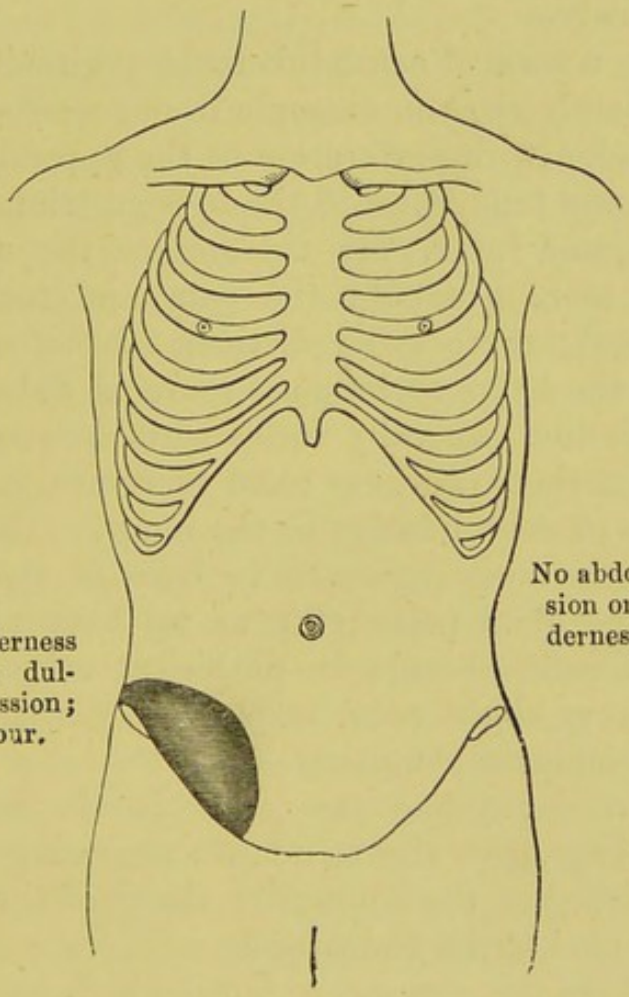
But you meet with a third form of the disease, as in Case 5, where the abscess has been localised from the first, in the iliac fossa. Under such conditions there is often an absence of the signs of general peritonitis, but there is a circumscribed tumour in the right iliac fossa, which is either dull or partially dull on percussion and tender to the touch. There may be an absence of fluctuation, as the pus may be deeply situated; there is usually no evidence of pelvic tumour, and there is rarely any gurgle on percussion (see Fig. 3).

The diagnosis is, of course, most important, inasmuch as the treatment must be based upon a clear conception of the pathological conditions present in each case. The chief points to be borne in mind are: the suddenness of the attack of severe pain in a person previously in good health, the more or less rapid supervention of peritonitis, the increased tension and tenderness in the right iliac fossa and in the hypogastrium, the diminished resonance on percussion in this region, often attended by a gurgling noise, and in some cases the presence of a tumour in the pelvis, ascertained by an examination made by the rectum. You may, however, easily mistake perforation of the appendix for a number of other acute and chronic diseases.

In intussusception we have, as in perforation of the appendix, sudden attack of severe pain, vomiting, constipation, and tumour of the abdomen; but the pain in the former is more colicky and intermitting, the vomiting and

constipation more severe, the tumour is better defined, harder, less tender, and there is almost always either hæmorrhage or the passing of blood and mucus, whilst there is an absence of the tension and tenderness, of dulness and gurgle on percussion in the hypogastrium or right iliac region, as in perforation of the appendix.

FIG. 3.—Diagram of physical signs in some cases of perforation of the appendix.



In typhlitis you have also pain and tenderness in the right iliac region, together with the presence of a tumour, but it differs from the ordinary cases of perforation of the appendix in its onset being more gradual, in the pain, tenderness, and constitutional disturbance being comparatively trifling, in the absence of frequent vomiting, and in

the tumour being well defined. But where perforation has taken place in an appendix situated close to or behind the cæcum, it may be impossible to distinguish between it and ulceration commencing in the cæcum itself. You should, however, remember that the latter is very rare excepting in phthisical subjects. Judging from my own experience, I should advise that whenever you observe the tumour in a case of typhlitis very slow in disappearing you should suspect perforation of the appendix and watch the case most narrowly.

There is a form of acute tubercular peritonitis, of which you have lately seen an example in our wards, which may be confounded with perforation of the appendix; for you have pain and tenderness of the hypogastrium, dulness on percussion, and fever. In the former the onset of the disease is more gradual; the pain and tenderness are more general; there is no distinct tumour or increased tension in the hypogastrium; if there is dulness on percussion, the line generally varies with the position of the patient; diarrhœa is urgent; and there are, in most cases, some signs of consolidation in the lungs. The absence of tumour in the iliac region or in front of the rectum is, however, the chief point; for, as we have already seen, where perforation occurs in phthisical subjects there is generally very slight pain, and severe diarrhœa is often the only prominent symptom.

We have lately had two cases in the wards which might, perhaps, give rise to doubt; one being an instance of inflammation of the connective tissue of the pelvis, the other of retro-uterine hæmatocele.

In the first the patient, a female, had been suddenly attacked with pain in the side, followed by fever and a sense of fulness and great tenderness in the iliac region, with flexure of the thigh upon the pelvis. But, as is most general in such cases, the left side was the seat of the mischief, the symptoms came on after a miscarriage, and, on examination by the vagina, a soft, diffused, painful swelling was discovered to the left of the uterus. An

abscess shortly after this formed in the left side and was opened. Such cases would only give rise to doubt when they occur on the right side, and where, as occasionally happens, the perforation of the appendix produces an abscess around the cæcum, and involves the structures in the iliac fossa; but a careful examination by the vagina and rectum, which should never be neglected, would at once reveal the true nature of the case.

In the second case, which was one of pelvic hæmatocele, the patient had been suddenly attacked with pain in the abdomen, and on admission a painful swelling was detected on the right side of the hypogastrium. But the symptoms had appeared at the catamenial period, the patient was very anæmic, and on examination by the vagina a large swelling was found blocking up the pelvis, pushing forward the uterus, and compressing the rectum. Such a case could only be confounded with perforation of the appendix by the practitioner neglecting an examination by the vagina.

You will probably think it unnecessary to discuss the probability of a disease of the right ovary being mistaken for perforation of the appendix, but the chance of such an error has been mentioned by some authors. The examination by the rectum or vagina would in most cases suffice to settle the question, for the clear, well-defined edge of an enlarged ovary is very unlike the diffused, elastic swelling arising from local peritonitis, and in addition to this the ovarian disease is a chronic malady, the other is acute.

Still more unlikely is it that you should confound an enlarged kidney with the disease in question. Renal diseases of this kind are always chronic, the tumours formed by them lie deeply behind the colon, and can be traced backwards to the loin, and the urine generally contains blood or pus. In one case, however, I met with a renal tumour lying behind the cæcum; but there was little pain or tenderness, no vomiting or constipation, and the urine contained blood.

Recurrent appendicitis

I have before mentioned that in some cases the ulceration of the appendix seems to set up adhesive inflammation around it, so that the patient may recover without the formation of an abscess. In others the appendix becomes greatly enlarged from being distended by secretions, and although no ulceration takes place, it is apt to excite inflammation around it. It is probably from one or other of these conditions that we meet with persons who suffer repeated attacks of inflammation around the appendix, accompanied by local or general peritonitis. The following case affords an illustration of this tendency to dangerous attacks of inflammation of the peritoneum.

Case 9.—I was requested in July, 1887, to see a gentleman, thirty-seven years of age, who had always enjoyed excellent health until two weeks before he consulted me. He was suddenly attacked with violent pain in the right side of the abdomen, which, although it had somewhat lessened in intensity, had continued ever since. There was general tenderness over the right side of the abdomen, most severe in the right iliac region, where there was also increased resistance to pressure and comparative dulness on percussion. The dulness was not complete, but the sound was less tympanitic than on the surrounding parts, and it did not vary in position with a change in the posture of the patient. The bowels were freely opened, although he had been liable to constipation; temp. 104°. He was confined to bed for three weeks, and when I again saw him in September he had lost flesh and complained of feebleness. Between July and September he had suffered three attacks of severe pain in the abdomen, with elevation of temperature and constipation of the bowels. Two weeks afterwards he had a fresh attack of pain in the right iliac region, attended by vomiting, but the bowels acted freely. There was now distinct dulness on percussion, as though from the presence of fluid, and in the situation of the appendix a hard, narrow, elongated tumour could be clearly felt, and to this part the pain was chiefly referred. In October I again saw him, as he had suffered a fresh attack of pain; the tumour in the site of the appendix was easily made out, and there seemed to be a sacculated collection of fluid in the hypogastrium. In May, 1888, he was much improved, had suffered only one attack, but it was attended by rigors, and no tumour could be discovered in the site of the appendix. He complained, however, of a dragging sensation in the region of the cæcum when he stood upright. In February, 1889, he had quite regained his former health and flesh, he had not suffered any fresh attack of pain, and the sensation of tightness when he stretched himself had quite disappeared. The bowels had acted regularly.

In the above case the suddenness of the attack, occurring in a person in perfect health, the severe pain, commencing in the region of the cæcum and extending to other parts of the abdomen, the vomiting, constipation, and elevation of temperature, pointed distinctly to peritonitis in the neighbourhood of the cæcum, whilst the localised dulness on percussion subsequently observed in the hypogastrium showed that adhesions had taken place around the effused fluid. There could be little doubt, from the presence of the narrow, hard, elongated tumour in the iliac region, that the cause of the mischief existed in ulceration or some other diseased condition of the appendix. It is, however, difficult to determine how the inflammation subsided, whether suppuration occurred and burst into the intestine, or whether the appendix became adherent to the neighbouring structures and ceased to be a source of irritation. I think the latter is the more probable view, as the recovery was very slow and the sensation of tightness when the patient attempted to stretch himself remained for many months, and only gradually subsided.

In the following case, however, there was no doubt that suppuration occurred around the appendix, and the patient's life was saved by the bursting of the pus into the intestine.

Case 10.—I was requested to see a young gentleman, about twenty-two years of age, who some months previously had been suddenly attacked with the symptoms of peritonitis. He recovered from it, but had suffered two or three times in a similar manner, and when I saw him we were able to discover a hard, narrow, elongated tumour in the right iliac region, which was extremely tender on pressure; the pulse was quick and the temperature elevated, but he had no vomiting. I diagnosed disease of the appendix, and recommended that the tumour should be cut down upon if his symptoms were not relieved in a day or two. I afterwards learnt that the patient remained very ill for two days, when he was suddenly relieved of the pain and fever by the occurrence of diarrhœa, a considerable quantity of pus being discovered in the evacuations. Since that time there has been no return of his attacks, and no tumour can be now discovered in the iliac region.

I have seen cases of this nature in both sexes that have presented considerable difficulties in diagnosis, and I have been in doubt whether the patient was suffering from typhlitis or disease of the appendix. The chief points of difference that will enable you to distinguish between these and cases of typhlitis are as follows:

In affection of the appendix the attack is more sudden, the pain more general and more severe than in typhlitis, the temperature is higher, the pulse quicker, vomiting is more urgent, and there is more general abdominal distension. There is also an absence of the large elongated tumour characteristic of typhlitis, and instead of it there is a narrow, tender, hard tumour in the site of the appendix. This difference in the tumours is perhaps the most valuable indication on which to ground the diagnosis; by it I lately diagnosed a case as one of cæcal tumour, the favorable termination of the case showing that the opinion was probably correct.

As regards the treatment of perforation of the appendix we must bear in mind that the disease consists of an abscess produced by the irritation of decomposing material, and that fatal peritonitis is in most cases due either to the proximity of the abscess, or to the entrance of pus into the serous cavity. The old treatment of venesection, leeches, and poultices, or the exhibition of mercury, can evidently be of no service, as none of these remedies can reach the cause of the complaint; nor could the modern method of giving opium freely and in repeated doses effect more than restrain the vomiting and relieve the patient of pain. The only rational treatment seems to be to evacuate the pus, as we do in the case of abscess in other parts of the body, and thus allow the healing process to come into play.

I have before mentioned that ulceration of the appendix is not in all cases followed by abscess, and that in others the matter may find its way into the intestine, and fatal results may be consequently averted. We must therefore consider the probability that exists of one of

these fortunate terminations occurring, for no prudent physician would feel justified in recommending a severe surgical operation, if it were likely that his patient would have a fair chance of recovery without it. Unfortunately the chance is small, for out of a considerable number of cases that have now come under my notice I cannot recollect more than five or six in which spontaneous recovery occurred. In two of these the abscess burst into the intestinal canal, and in the rest the symptoms gradually subsided, probably from the injured parts becoming adherent without the formation of pus. But, as you will have observed in Case 3, recovery may be only temporary, and any sudden accident may, by rupturing the adhesions, give rise to fatal peritonitis.

In most cases, then, I fear we shall have to resort to a surgical operation in order to save the life of the patient, but the prospect of success will vary in each case according to the locality occupied by the pus, the amount of general peritonitis, and the condition of the patient.

The cases in which the abscess is confined to the iliac fossa and where there is no general inflammation of the peritoneum are those that are most easy of diagnosis and, at the same time, offer the best chance of success for an operation. If such a case be left to nature, in all probability, the walls of the abscess will give way, as in Case 5, and suppurative peritonitis will be suddenly set up. As soon, therefore, as the diagnosis is tolerably sure an operation should be undertaken. Most of the successful cases of operation that have been recorded seem to have been of this nature.

When the pus has burrowed upwards in the connective tissue, an operation is also demanded, and good results may be obtained if it be performed at an early period.

Case 11.—A female was admitted into my wards who had been suddenly attacked with severe pain of the abdomen, obstinate constipation, vomiting, and fever; but, although there was general tenderness, the distension of the abdomen was not very great. Pus was diagnosed behind the cæcum, and an incision was carefully made over the part by my

surgical colleague, who succeeded in opening the abscess. The patient was immediately relieved, and eventually left the hospital quite well.

In the above there was considerable difficulty in the diagnosis, and in many cases of this nature the evidence of suppuration can be obtained only in the loin and not in front. Under such circumstances the operation might be performed in the loin, or a double opening might be requisite, in order completely to drain the connective tissue.

The greatest difficulty is, however, met with in the class of cases most frequently presented to us, where there is general peritonitis from the onset, and the pus is only walled in by the adhesion of some of the neighbouring coils of small intestine. If you should see the patient at an early period and when the diagnosis cannot be definitely settled, you may hope that the peritonitis has arisen from some other and less fatal cause. Let him be kept in bed with the knees raised and tied together, and let him be restricted to ice or to small quantities of liquid food. Hot fomentations may be used externally, and repeated doses of opium may be prescribed to allay the pain and check the vomiting. But if, after twenty-four or thirty-six hours, the symptoms remain and the patient is not improving, you should most carefully examine the different localities in which the physical signs presented by ulceration of the appendix are apt to show themselves, and in many cases it will be requisite to administer chloroform, in order that the examination may be thoroughly carried out.

If you can satisfy yourself that pus has been formed, or if you have a suspicion of its presence, it is, I think, proper that the site of the appendix should be explored by an incision, as the operation, if carefully performed, will not add to the patient's danger, whilst if an abscess be reached there will be a fair chance of saving his life. Cases are on record where the abscess has not been discovered, and yet the pus has burst through the wound a day or two after the operation.

It is difficult to lay down distinct rules for the treatment of the cases I have before mentioned, where repeated

attacks of perityphlitis occur without apparent cause. In most of these I believe there is either a diseased state of the appendix, or the parts are bound down by adhesions, and as you will see in Case 9, it is possible for the patient to recover by medical treatment alone. It has been proposed in such cases to cut down upon, ligature, and remove the appendix, and operations of the kind have been successfully performed by Mr. Treves and others in this country and in America. The circumstances of each case must determine the line of treatment to be adopted, but if the symptoms are not very urgent, I think it will be found advisable in the first place to keep the bowels moderately open by mild aperients, to regulate the diet and support the lower part of the abdomen with a well-fitting bandage.* If such measures fail in preventing the attacks, the operation might then be undertaken and the appendix be removed.

It is scarcely within my province to discuss the best method of performing the operation required for abscess round the appendix, as the surgeon who undertakes the operation must act according to the circumstances of the case. Different opinions, however, have been held as to the most advisable method of procedure.

As to the cases of localised abscess there can be only one opinion, that an incision should be made parallel to the upper part of Poupart's ligament, the muscles carefully divided, and the pus sought for by a grooved needle or aspirator. As soon as the abscess has been punctured, an opening should be made, of sufficient size to admit of the free drainage of the sac. In one of my cases, although the abscess was opened, the incision was not large enough, so that on post-mortem examination the pus was found to have extensively infiltrated the connective tissue.

When there is general peritonitis along with the abscess round the appendix, it has been disputed whether it is best

* A well-marked case of recurrent peritonitis, attended with a hard, elongated tumour in the site of the appendix, has lately completely recovered under such treatment.

to open the abdomen in the middle line and search for the pus, or first to evacuate the abscess, and afterwards to wash out the abdomen if necessary. In two of my cases the former plan was adopted, and both ended fatally. In one it was remarked that there was a gush of pus as soon as the abdomen was opened, as though the adhesions had given way from the intestines pressing towards the opening, thus allowing the decomposing material to come into contact with all parts of the serous membrane. I think, therefore, it would be a better practice first to open and drain the abscess, and then, if necessary, to make a small opening into the abdomen for the purpose of washing out and draining the peritoneal cavity.

LECTURE II.

STRICTURE OF THE ILEO-CÆCAL VALVE.

Gentlemen,—At our last meeting we were discussing the subject of perforation of the vermiform appendage; and we found that by a careful consideration of its symptoms and the physical signs accompanying it, the existence of the complaint could be generally diagnosed. I now wish to draw your attention to another disease of the cæcum that is more difficult of recognition. The cases are often so obscure that I have not ventured upon an exact diagnosis in any of those that have come under my own notice, but have had to content myself with the opinion that there was a stricture in some part of the intestinal canal. It will, however, be evident that, unless we can satisfy ourselves as to the position as well as the nature of the disease in a case of this kind, the treatment must be vague and uncertain.

I will first read to you the cases to which I have referred, and you will see at once how greatly they differ from each other in their history, in their clinical aspects, and in the cause of the obstruction discovered after death.

Case 1.—Sarah J—, aged twenty-nine, admitted into the London Hospital on November 6th, 1874.

She complains of a fixed pain near the umbilicus, coming on directly after food. She has no vomiting and no heartburn, but suffers from slight acidity and excessive flatulence. Tongue rather dry, thirst, bowels much confined and only act with the assistance of aperients; pulse 84. She has latterly lost flesh. Catamenia have not appeared for seven weeks. The abdomen is greatly distended, and is divided into longitudinal ridges, which are continually altering their position, their motions being very

apparent. There is no tenderness on pressure. The uterus is normal, and no cause for intestinal obstruction can be discovered by vaginal examination. The percussion note is very tympanitic in every part, but the left side is more prominent and more clearly tympanitic than the right. After drinking no gurgle can be detected in the stomach by auscultatory percussion.

She states that she had always enjoyed good health until three months ago, when she was suddenly attacked with severe pain near the umbilicus, accompanied by diarrhœa. This attack lasted eight days, and ever since that time she has suffered from attacks of pain of the abdomen, which are increased by exercise as well as by food, and from occasional vomiting, which chiefly comes on in the evenings.

December 24th.—The vomiting has ceased since her admission, but she still complains of pain at the umbilicus, coming on a short time after food. The bowels now act regularly with the aid of enemata. The movements of the intestines have become more visible and are very well marked.

January 8th, 1875.—The pains are now much more severe than formerly, and the whole of the front of the abdomen seems to be occupied by a mass of moving intestinal coils. She had vomited a large quantity of pure bilious fluid mixed with mucus. Pulse 120, small and feeble.

She died rather suddenly, without any alteration either in her symptoms or in the physical signs.

Post-mortem examination.—The small intestines were found to be enormously distended, especially the ileum; they contained a dark-coloured fluid; their walls were much thickened, and numerous hæmorrhages were found in the submucous coat; the ileo-cæcal valve was much contracted, but numerous small openings existed in its place between the small and larger intestines; some solid fæces were in the ascending colon; the descending colon was much contracted. The other organs of the body were in a healthy state.

Case 2.—Fanny F—, aged twenty-seven, admitted August 24th, 1877.

She complains of severe pain of the abdomen, coming on in paroxysms, attended with occasional vomiting; the pulse is 100; tongue furred; appetite bad; temperature 100°; the bowels have been confined for two weeks.

The abdomen is much distended and tympanitic; no dulness can be discovered in any part, but there is increased tension and resistance to pressure in the right iliac region, although no tumour can be felt there. The motions of the intestines are visible over the whole abdomen; they are constantly present, but seem to be most distinct in the umbilical region. Catamenia irregular. On examination by the rectum a round hard mass can be felt, apparently in Douglas's pouch, and the uterus seems to project forwards.

She gives a very confused account of her illness; but as far as can be learned from her, she had four years ago suffered from what she calls a "miscarriage," and the child came away in pieces, during a period of five months. After this she suffered for two years from severe pains of the abdomen, which came on at intervals. These paroxysms of pain then left her, but two months ago she was again attacked with severe pain in the bowels, accompanied by a hard swelling and a feeling of movement in the abdomen, and with vomiting. After her admission the bowels were freely opened by enemata, and a large quantity of brown-coloured fæcal matter was evacuated.

28th.—The liver dulness extended from the upper border of the fourth rib to the upper border of the seventh, and some dulness was found in the right flank. The patient was examined under chloroform, and a small, rounded, hard swelling was discovered in the recto-uterine pouch. A copious enema was thrown up above the tumour, but it was not retained. The temperature rose to 102°, but no pain was complained of.

29th.—The patient seemed to be somewhat relieved, but she suddenly became collapsed when straining at stool, and vomited some fæcal-looking fluid. She died the same evening.

Post-mortem examination.—Many of the coils of the intestines were adherent, and a communication existed between the cæcum and a portion of the small intestine adherent to it, whilst the sigmoid flexure was adherent to the rectum, and a communication also existed between them. The lower end of the ileum was much dilated and hypertrophied, and the ileo-cæcal valve was contracted to the size of a swan's quill. There was a cyst connected with the left Fallopian tube, and a fœtal parietal bone is also mentioned in the notes; but its exact situation is very difficult to make out, as in one account it is stated to have been situated in the sigmoid flexure, in the other in the cyst.

Case 3.—James G—, aged forty, admitted June 6th, 1883, complaining of pain in the abdomen of a paroxysmal character, coming on every three or four minutes, and attended with vomiting of all food. The pain is so severe that it prevents him from sleeping, and he cannot lie in any position very long. The bowels have not been moved for nine days. Pulse 92; temperature 99·6°.

The abdomen is slightly tense and painful on pressure, and the movements of the intestines are very visible; no tumour can be felt, but there seems to be more fulness behind to the left than to the right of the spine, and the percussion note is rather duller there. The rectum is large, and no stricture can be discovered. Large enemata were employed, but no stool was obtained.

The patient had resided in Assam for seven years, and had visited various parts in India, but had generally enjoyed good health. He contracted syphilis twenty years ago, had malarial fever and ague some

years ago, and had suffered from slight attacks occasionally since then. He first felt griping pains in the abdomen about one month since, and took aperient medicines, which produced purging but did not relieve the pain. During the last month he has taken purgatives about half a dozen times, the last three times with little or no effect. On the last occasion (June 5th) it produced pain and uneasiness with nausea, and about seven or eight hours afterwards he vomited, and continued to do so at short intervals for many hours. He has at present a sore on the leg, apparently syphilitic, which has been unhealed for the past four years.

11th.—He was carefully examined under chloroform, but no stricture could be discovered. He describes the pain as commencing at the level of the umbilicus, and then passing down each side, each access of pain being attended with great rumbling of wind.

13th.—He has had two slight stools to-day; the first was liquid, the second solid, but of small size; the abdomen is not so tense, and is not tender on pressure.

15th.—He seems easier, the pain coming on at intervals of about one hour, but relieved by change in his position. The abdomen is less distended, and there is dulness over the cæcum and ascending colon. The movements of the intestinal coils are very apparent.

He varied from this date, the pain and vomiting being one day easier, another day more severe. The operation of colotomy was first performed, but the colon being found contracted the small intestine was opened, with the result of giving vent to a large quantity of liquid fæces. He was greatly relieved, but some colicky pains still continued, and he was attacked with pneumonia on July 1st, of which he died on July 6th.

Post-mortem examination.—There were some old peritoneal adhesions in the pelvis; the ileo-cæcal valve was much contracted and only admitted the point of the forefinger; there was some thickening of the ileum near the valve with a semilunar ulceration, and a little further along the ileum was a raised patch with ulceration. The other organs were healthy.

The three cases I have just quoted are the only instances of this disease that have fallen under my own notice, or at any rate they are the only ones in which stricture of the ileo-cæcal valve was proved to be present by post-mortem examination. I have only been able to discover one other in the post-mortem records of the hospital, but no history of the case can be found.

The account merely states that a sailor, forty-five years of age, died in July, 1851, and the ileo-cæcal valve was obstructed by a scirrhous growth completely surrounding

the intestine and leaving an aperture through which only a crowquill could be passed. The large intestine was contracted ; the small intestines were distended with fluid and flatus, they were of a dark-slate colour and much congested, and the muscular coat was thickened.

Various cases of cancer of the cæcum are recorded, but as there is no mention of stricture of the valve these cannot be taken into account.

In an admirable paper on Intestinal Obstruction by the late Dr. Hilton Fagge twenty-two cases of intestinal obstruction are quoted as having occurred at Guy's Hospital from January, 1854, to November, 1868, but only one is mentioned in which the cæcum and ileum were the seats of stricture, the former intestine "being puckered by scar-like patches of cancer on the peritoneal coat," but no mention is made of stricture of the valve. M. Duchaussoy collected twenty-seven cases of stricture of the intestines, in only one of which the cæcum was the seat of disease, but no mention is made of the state of the ileo-cæcal valve. I have, however, been able to collect twenty-six cases of stricture of this valve, recorded by various authors ; and although in many the details both of the morbid conditions and of the symptoms during life are very meagre, they will, I hope, furnish materials that may assist us in our study of this rare form of disease.

You will remark that, although all the cases I have quoted showed a contraction of the ileo-cæcal valve, there was a considerable difference in the morbid conditions associated with it. Let us look, for instance, at Case 1 ; in it, although the valve is described as obstructed, there is no mention of any disease of the intestines or of the adjoining structures, and it is stated that a number of small openings in the site of the valve existed between the ileum and the cæcum.

In the catalogue of the Dupuytren Museum, in Paris, a similar case is described, in which at the contracted part there was a number of bridles crossing the opening, consequently affording the appearance of a sieve. It is sug-

gested by the writer of the catalogue that the stricture had originated in an intussusception, and that the bridles were the remains of small portions of the included intestine that had escaped the sloughing process. This was, in all probability, also the origin of the contraction present in Case 1; for you will remember that the patient referred the commencement of her complaint to an illness which lasted for eight days, and had commenced suddenly with severe pain near the umbilicus, accompanied with diarrhœa. The objection will probably occur to you that both of these cases were females, and that they are more rarely affected by this form of invagination than the other sex; but if you bear in mind the sudden nature of the attack, occurring in a person who had been always previously in good health, the length of the primary illness, the gradual development of the symptoms after it, and the peculiarity of the morbid appearances found after death, you can have but little doubt that this explanation of the case is correct.

When we last met we were considering the abscesses near the cæcum produced by ulceration of the vermiform appendix, and you might reasonably suppose that a contraction of the ileo-cæcal valve would often result from such a condition. This is, however, not the case, for I have only been able to find one example of the kind, which is recorded by Dr. Hensinger. The patient had eleven years before her death suffered from an attack of perityphlitis; and on post-mortem examination the ileo-cæcal valve was found to be completely closed, the communication between the small intestine and the cæcum being maintained by three fistulæ, which passed from one to the other through thickened tissue, the remains of an old abscess around the cæcum. The rarity of this termination of perityphlitis may be explained by the fact that most of such cases end fatally within a short period, and that when life is prolonged the abscess is usually discharged, either through some of the neighbouring organs or by the pus making its way to the surface of the body.

In eight cases out of twenty-six the ileo-cæcal valve is

stated to have been contracted, and in six it is recorded as contracted and indurated, without any mention being made of a malignant growth accompanying it; so that in more than half of the whole number the morbid change seems to have been due to chronic inflammation alone. In one instance, mentioned by Dr. Wickham Legg, the contraction was believed to have been congenital, for the patient had suffered from severe attacks of colic since the age of five, and a large number of cherry-stones were discovered above the stricture. It was suggested by Schroeder van der Kolk, in a case that came under his observation, that the stricture might have originated from ulceration produced by the impaction of a foreign body; but this must be a very rare cause, as I have been unable to find any history of a previous intestinal obstruction, either in the cases that have occurred in this hospital or in those recorded by other observers. But it has been frequently remarked that the cæcum was also thickened, and when we remember how frequently this portion of the intestinal tube suffers from inflammation, we should feel surprise that the valve is not more generally the seat of stricture. It is not uncommon to find tubercular and typhoid ulcerations on the mucous membrane of the ileo-cæcal valve, and it is strange that such lesions do not more frequently lead to permanent narrowings; but I am strongly inclined to suspect that a moderate amount of stricture is more common than is supposed, and that it is often overlooked on acount of the absence of symptoms during the life of the patient.

Let us now turn our attention to the third case, where there was thickening and ulceration of the mucous membrane at the lower part of the ileum, in addition to the stricture of the valve. This man had suffered from syphilis, and had an ulcer of the leg, apparently syphilitic, at the time of his admission. A very similar case is recorded by Dr. Bartels, in whom, although the patient denied ever having had syphilis, there was found after death contraction of the ileo-cæcal valve and extensive ulcerations of the cæcum and small intestines, and also indurations in the

lungs, which were considered as decidedly syphilitic. Now, these cases are of great interest, not merely as showing that ileo-cæcal stricture may be the result of inflammation of the neighbouring intestines, but also as pointing to syphilis as the probable cause of the local mischief. The very striking cachexia so often accompanying syphilis is scarcely to be explained by the lesions we are accustomed to find after death; but, if it could be proved that the secreting and absorbing surfaces of the gastro-intestinal tract are as often the seat of mischief as the skin and mucous membrane of the mouth, we should make a considerable advance in our knowledge of the effects produced by this malady.

I am fully convinced that syphilis frequently attacks the mucous surface of the digestive tract, for I have seen most obstinate cases of gastric ulceration and of dyspepsia following syphilis which have quickly yielded to the use of iodide of potash and other remedies of a similar character. In order, however, to discover the presence of such changes, after death it would be necessary to employ careful microscopical investigation, for important changes are often present in the mucous membranes without producing any alterations that can be recognised by the naked eye.

In nine out of twenty-six cases the stricture is stated to have been produced by cancer, and in two of these the cæcum was also affected. I would here draw your attention to the extreme rarity with which primary carcinoma affects the cæcum, as compared with the frequency of its presence in the stomach, colon, and rectum; any theory that may be brought forward to account for the origin of this malady must take into consideration its predilection for certain parts of the gastro-intestinal tube as compared with others.

As might be supposed, inasmuch as strictures of the ileo-cæcal valve are produced by different agencies, the amount of obstruction greatly varies. Thus in five cases the little finger could be barely passed through the valve; in one this could not be effected; in another the opening

was only one quarter of an inch in diameter; in five it only admitted a quill, and in one a needle; in one it was almost completely closed, and in four no opening at all could be discovered. Of course the effects of the constriction also varied, for wherever it was very narrow the small intestines were found to be vastly distended with fluid, the muscular coat of the ileum was hypertrophied, and the results of vascular congestion were seen either in recent extravasations of blood or in the slate colour of the walls of the gut; the colon was usually contracted, although in many cases it contained a small amount of fæces.

In Case 2 adhesions were found between a coil of the small intestine and the cæcum and between the sigmoid flexure and the rectum, and communications had been established between these portions of the intestinal canal, so that the effects of the distension must have been considerably lessened. I have found three other cases on record in which a similar process had taken place; in one a communication had been established through the appendix vermiformis, which was much dilated, and was adherent to the ileum; in the others intestinal fistulæ had been established between the small and large intestines. Old adhesions have been often met with, and are probably the results, as in Cases 2 and 3, of a previous attack of local peritonitis, or of inflammation excited by the great distension to which the gut had been subjected.

You will remember that we found that the male sex is much more liable to all forms of acute disease of the cæcum than the female, whether it be typhlitis, ulceration of the appendix vermiformis, or ilieo-cæcal intussusception; but you will now see that the contrary is the case as regards contraction of the ileo-cæcal valve; for out of twenty cases in which the sex is recorded, fourteen were females. If we analyse them according to the morbid conditions coexisting with the stricture, the same circumstance is apparent; thus both of the cases supposed to have arisen from invagination were females, six out of eight cases of cancer, and four in which contraction alone is recorded were all

of the same sex. The only exception is in the group in which the valve is said to have been indurated, and which I have suggested may have arisen from syphilis, for in these four were males and only one was a female. Of course, these figures are too few to justify us in drawing any general conclusions ; but, like the corresponding case of the greater tendency in the female to contraction of the cardiac valves, they seem to point either to a greater liability in the female to contraction after inflammation, or to some difference in the conditions under which she is placed.

It will be interesting to examine the time of life at which the complaint is most apt to occur. The age is mentioned in only sixteen of the twenty-six cases I have been able to collect, and of these ten were between twenty and forty years of age. If, however, we exclude those in which cancer is stated to have been present, we find that eight out of ten were between twenty and forty, and as the other two are stated to have exhibited induration, it is not improbable that these may have been connected with malignant disease. We should bear in mind this fact in the diagnosis of any particular case, for most of the diseases with which we are apt to confound simple stricture of the ileo-cæcal valve are especially apt to occur at an early or at a late period of life.

It will be remarked that the disease commenced differently in the three cases I have narrated. In the first the patient was attacked suddenly with diarrhœa and pain in the abdomen, and after an illness of eight days these symptoms subsided, but were gradually followed by those of intestinal obstruction ; in the second the first indication of illness consisted in a sensation of movement and of pain in the abdomen, attended with swelling ; whilst in the third griping pains first attracted the patient's attention. In twelve out of sixteen of the cases I have collected and whose histories are recorded, the first symptom was pain in the abdomen, usually of a colicky character ; in five vomiting was also present, and in three severe constipation obliged the patient first to seek for medical advice.

In the cases in our wards attacks of colicky pain formed the most noticeable symptom through the whole course of the illness; at first coming on only occasionally, but increasing in frequency and severity as the disease progressed. Of sixteen recorded cases this was the prominent symptom in eleven; in most of them its spasmodic character was specially noticed, and in some a rumbling of the intestines at the end of each paroxysm of pain is also stated to have been present.

Abdominal distension was noticed in twelve, and vomiting was a well-marked symptom also in twelve cases. In one case vomiting was the chief symptom, and lasted for many years, the patient being looked upon as hysterical, but after death the only morbid condition that could be discovered was stricture of the ileo-cæcal valve.

In five instances the bowels continued to act regularly for some time after severe pain had been complained of, but generally constipation came on at an early period, and was removed by purgatives or enemata, but returned, and eventually the symptoms of complete intestinal obstruction were developed. It should, however, be borne in mind that even after the bowels—as in Case 3—ceased to act regularly, small stools were occasionally passed; why I wish to press this upon your notice is because this circumstance has often led to the delusive hope that the obstruction was about to be overcome, when, in reality, the ill effects of intestinal distension were increasing day by day.

A certain amount of tenderness on pressure has been observed in some instances, but general tenderness was not usually present, excepting when peritonitis had been excited by perforation of the intestine. Of course, the whole system sympathises with the state of the intestinal canal; the tongue becomes furred or dry, the appetite fails, thirst is a prominent symptom, in some instances there is a rise of temperature, and the pulse becomes quick, out of proportion to the other symptoms, having varied in five cases from 100° to 120°.

In two of the cases I have collected a tumour was dis-

covered in the right side of the abdomen, but in each it was found after death to have been connected with a disease of the cæcum which co-existed with the stricture of the valve, and in none of our own cases was there any appearance of a tumour.

In the three cases I have narrated the movements of the small intestines were distinctly visible through the abdominal walls, and in seven out of sixteen cases I have collected particular mention is made of this circumstance, and in only one it is stated not to have been present. As this is a most important physical sign in all cases of obstruction of the intestines, it will be necessary for us to devote some attention to its consideration. You must be careful not to confound it with the movements of the intestines which you will occasionally observe in females who have had repeated pregnancies, and in some children with very thin abdominal parietes. In these the colon often projects across the umbilical region, and as you watch you will see its shape and position gradually, but slowly, change. But there is no active contraction, no writhing motion, as though the canal were thrown into spasmodic efforts to force along its contents, as in cases where there is a constriction in the canal. Again, the motions of the stomach are occasionally capable of being seen, as you were able to observe in cases that have been lately in our wards, but in these the movements are always slow, the elevations are much broader than where the intestines are affected, and you have the symptoms and physical signs of stricture of the pylorus to guide your diagnosis.

Then you will naturally ask why the movements of the intestinal canal should be so increased as to be visible. This circumstance had long attracted the attention of practitioners, as occasionally occurring in intestinal obstruction, but Dr. Hilton Fagge first insisted upon it as a sign of hypertrophy of the muscular coat, and there is no doubt that his opinion is correct, as in every case that has fallen under my notice wherever the motions of the stomach or intestines have been visible the muscular coat has been

found on post-mortem examination to have been thickened. The visible movements of the intestines have, in fact, the same value in the diagnosis of an obstruction in the canal as the increased impulse of the heart has in cardiac disease. You detect, for example, a systolic murmur over the aorta, and you are in doubt whether it is merely functional or is produced by a narrowing at the aortic valves. In order to determine the point, you examine the apex of the heart to ascertain if there is an increase in its impulse or a deviation from its normal position; for if this is the case, you know the ventricle has become hypertrophied from the increased action required to drive the blood through the constricted opening. In like manner, when you see the intestinal contractions so much increased as to be visible through the walls of the abdomen, you feel certain their muscular coat has become hypertrophied from increased efforts to overcome some obstruction to the progress of their contents. In the case of the heart, you know that its impulse may be unusually apparent, because the chest walls are very thin; and so, as I have said before, the motions of the intestines, although no hypertrophy is present, may be seen through very attenuated abdominal parietes; but in either case you diagnose hypertrophy by the increased force with which the contraction takes place. Hypertrophy of the heart occurs whenever there is difficulty in the transmission of the blood through the vascular system, even though the valves may be healthy, as you see daily in cases of chronic Bright's disease; and in like manner any long-continued impediment in the lower part of the small intestines will give rise to visible movements of the intestines of the same character as those apparent in stricture of the ileo-cæcal valve.

There is another physical sign which was observed in a case recorded by Dr. Wickham Legg, and which was found after death to have been produced by the collection of cherry-stones in the ileum. It is described in the words of the reporter thus:—"In the left iliac fossa and a little above the left flank a most singular phenomenon, both of

sound and feel, was discovered. In regard of sound it is like dryish crackling, not unlike surgical emphysema; is by others likened to peas in a drum shaken about, by others to marbles." As, however, I have found only three cases in which there was any collection of foreign bodies above the stricture, this sign is not likely to be of much use to us in diagnosis.

All the symptoms we have considered arise from the efforts of the intestines to overcome the obstruction to the onward progress of their contents, but as the constriction is often a very slow process, no functional disturbances may be produced so long as there is a tolerably free opening into the cæcum. This is the most probable explanation of a few cases that have been placed on record, in which the contraction of the ileo-cæcal valve was accidentally discovered after death, the patients having suffered no inconvenience during life, and having died of other diseases. Thus, in one case death took place from typhoid fever, in another it was caused by pneumonia, and in a third by tuberculosis.

We can only reckon the commencement of any particular case from the time at which the patient first experienced pain or other symptoms resulting from obstruction, and we find the duration of the disease varies both with the condition of the stricture and the cause producing it. When it was connected with cancer, two died within one month, one in five weeks, one in three months, one in five and another in six months. Vomiting was a prominent symptom in all, and death seemed to result solely from intestinal obstruction. When the stricture was independent of cancer, one died within one month, three between one and three months, one suffered for two years, one for seven and another for twenty-one years. The case supposed to have proceeded from intussusception lived only five months, whilst that beginning with perityphlitis lived eleven years.

Putting aside those connected with cancer, the duration of any particular case seems to depend chiefly upon the

narrowness of the stricture and upon the amount of relief that may have been afforded by a circuitous route established between the small and large intestines.

The diagnosis of this disease is attended with great difficulty, and you must, in any case where you may suspect it to be present, bear in mind its extreme rarity. The chief points to remember are that it occurs most commonly in the female between the ages of twenty and forty, that the prominent symptom is the frequent attacks of severe colicky pain attended with constipation and vomiting, and that active movements of the intestines are visible through the abdominal parietes. If you find such conditions, you know there is an obstruction in some part of the intestinal canal, and you have to determine its seat and the condition that has produced it.

The first point is to ascertain whether the stricture is or is not in the course of the large intestine, for in the majority of cases of narrowing of the intestine the sigmoid flexure or the rectum is the part affected. If such is the case you often have a history of the passage of blood or mucus, or the fæces may have been of very small size, and in many cases you can prove the existence of the stricture by the finger or by a bougie passed up the rectum. If, on the other hand, the ascending colon or the cæcum is the seat of stricture, a tumour can be generally distinguished in the right side of the abdomen, for in this situation it is almost always the result of cancer. When a stricture is situated at the cæcum there are usually well-marked dulness and distension on the right side of the hypogastrium, whilst the opposite side is the seat of these signs in case the upper part of the rectum is involved.

It is often said that when the left side of the large intestine is constricted the colon projects in the umbilical or epigastric region, whilst the umbilical and lumbar regions are comparatively flat if the stricture is in the small intestine. This, like all other general rules, although often of value, is not always to be relied upon ; for we not infrequently see the colon so lengthened and displaced that

it seems to fill the whole of the abdomen; whilst, on the other hand, a distended small intestine may be pushed upwards so as to occupy the epigastrium, and may consequently simulate the appearance of a distended colon. You might expect that when the colon was constricted the visible movements of the intestines would be directed to the left side, and that they would tend to the right if the stricture was in the small intestines; but it is in most cases impossible to determine in what direction the intestine is really moving, for a number of coils seem to be everywhere twisting about at the same time. What will perhaps be your best guide is that in stricture of the small intestine the motions are more energetic, the coils seem to be shorter and change their position more constantly, and the gurgling sound produced is moister, and gives you more the impression of the motion of fluid and gas intermixed than when the colon is the seat of the obstruction.

You may confound chronic cases of ileo-cæcal intussusception with the disease we are considering, for in both frequent attacks of colic are a prominent symptom. But the former is most common in children and in males, whilst constriction of the ileo-cæcal valve presents itself generally in females of middle age; in intussusception you have occasional discharges of blood or mucus, and there is almost always a tumour to be felt, which is apt to change its form, consistence, and position from day to day.

Constriction of the small intestine, whether produced by adhesion to some of the neighbouring organs or by contraction of the mesentery, may give rise both to the symptoms and physical signs of stricture at the ileo-cæcal valve; indeed, this was diagnosed in Case 2 as the probable cause of the patient's sufferings, as a pelvic tumour was discovered, and there was a history of extra-uterine fœtation. You will only be able to arrive at a correct conclusion by making a careful examination of the pelvic organs in order to ascertain if there is any disease of the bladder, uterus, or ovaries likely to have given rise to local peritonitis. If, for example, carcinoma of any of these organs

were discovered, constriction of the small intestines from adhesion would be a more probable diagnosis than simple stricture of the valve. You might imagine from the manner in which the intestines are often found to be matted together in tubercular peritonitis that intestinal obstruction would often occur from this cause. This does sometimes take place, but as ulceration of the mucous membrane is also usually present, diarrhœa, and not constipation, is generally the prominent symptom.

Cancer of the peritoneum frequently gives rise to constriction and obstruction of the intestines. When the disease is, as is usually the case, associated with ascites and with abdominal tumours, the diagnosis is tolerably easy. But there is another and more rare case, in which the cancer is scattered over the peritoneum in a miliary form, and in which attacks of colic are for some time the only prominent symptom; and here it would be a matter of great difficulty to arrive at a correct diagnosis in an early stage of the disease. You should in such instances always examine by the rectum, for often small tumours are to be felt in Douglas's pouch, when they are to be discovered nowhere else; and if in addition to the presence of a tumour you should find a gradual loss of flesh and strength, the occurrence of ascites, or an implication of some other organ, you have facts that would enable you to arrive at a correct conclusion.

The first two cases occurring in our wards were treated by morphia, in order to relieve the pain from which the patients suffered, whilst the action of the bowels was assisted by enemata, but only temporary relief was afforded. There was no complete obstruction in either case, and the patients both died suddenly from collapse.

In the third case the patient was admitted on account of obstruction of the bowels, and although some slight evacuations were obtained by enemata, he was not relieved until the small intestine was opened by operation, and its contents evacuated. He died not of obstruction, but of pneumonia.

It will be remarked that in none of these cases was the communication between the ileum and the cæcum completely closed; in the first there were two or three small openings, in the second a quill could be passed, and in the third the valve admitted the point of the finger. There was therefore nothing that was necessarily fatal, and we can only attribute their unfortunate terminations to the great and long-continued distension of the intestines and the effects of this upon the nervous and vascular systems.

In any future case of this kind, what treatment should be adopted in case the diagnosis was sufficiently clear to enable us to fix upon the ileo-cæcal valve as the point of stricture?

When you meet with a patient presenting symptoms similar to those described in the foregoing cases, I should advise you first to place him on a milk diet, whilst you relieve the pain by sedatives. I was requested to visit a lady who had for many months suffered from constant and severe griping pains, attended with great emaciation and loss of strength, and in whose abdomen the contractions of the intestine were distinctly visible. She was restricted to milk and other liquids, and small and frequent doses of morphia and belladonna were prescribed. I have since heard from her medical attendant that she slowly but completely recovered.

But in case such treatment should fail it would be necessary to consider the advisability of ascertaining the cause of the obstruction by means of an operation. We have no medicines that can prevent the gradual contraction that occurs after chronic inflammation of the ileo-cæcal valve any more than we can stop a similar change in the mitral or aortic valves of the heart; and although, when we have reason to suspect syphilis as having originated the constriction, we might employ medicines appropriate for that disease, it is unlikely that we could restore the part to its original condition by means of mercury or iodine. Clearly, then, the only plan to afford relief is what was done in the third case by Mr. Waren Tay—viz. to make

an artificial opening into the small intestine near to the cæcum.

The proper method of performing such an operation falls within the province of the surgeon, but I would advise you, in case you should have to undertake it, to read the account of a successful case of opening of the small intestine that was under the care of my colleague, Mr. McCarthy, which was published in the 'Medico-Chirurgical Transactions' for 1872. It is true the patient eventually died, but the operation was beneficial by affording relief, and the wound had healed some time before death took place.

There seems indeed no reason why an artificial opening should not be made into the small intestine with a fair prospect of success, if the same precautions be taken as in other operations on the abdominal cavity.*

But the chief point is, not to delay it until the portion of the canal above the stricture has become paralysed, or the heart has been so much depressed, through the sympathetic, that collapse is imminent.

I have mainly brought these cases before you to impress upon your minds that all strictures of the intestines are not cancerous, and therefore not necessarily fatal, that the hypertrophy of their muscular walls affords a most valuable sign that constriction has been for some time in existence, and not likely, therefore, to yield to medical treatment, and that the interference of the surgeon may not only afford temporary relief, but may restore the patient to a state of comparative health.

* Since the delivery of this lecture I have seen a case in which the symptoms and physical signs of stricture of the lower part of the small intestine were present, but which seemed to have arisen from pelvic adhesions. The intestines were opened by operation, but the patient died shortly afterwards.

LECTURE III.

FÆCAL ABSCESS.

GENTLEMEN,—We have hitherto been directing our attention to cases of abdominal abscess, and a little consideration will show you how important the subject is, for the chance of the patient's recovery entirely depends upon the accuracy of the diagnosis, and a timely resort to surgical measures often presents the only chance of affording relief. But you might naturally think that such cases are better fitted for discussion by the surgeon than the physician; and so no doubt they would be were it not that from the position of the disease, and the obscurity of the diagnosis in the early stages, the patients suffering from them are usually admitted into the medical wards. When we were examining the subject of perforation of the vermiform appendage, I mentioned a boy admitted under my care who at first presented a tumour in the abdomen, but in whom a swelling afterwards appeared in the thigh, which on being opened discharged fæces. As fæcal abscesses are of rare occurrence, and are often very difficult of diagnosis, I propose that we devote our attention to them on the present occasion. I will first read you an abstract of the case to which I have alluded.

CASE 1.—A boy, aged fourteen, was admitted in September, 1879. He had suffered for three weeks from severe pain in the right iliac fossa, increased at night, but easier when he lay in the recumbent position with the thigh flexed on the abdomen. He also complained of severe pain of the back, which he stated was more severe than that of the side; this pain he described "as if a knife were being thrust in below his ribs." The bowels were confined, and when they were freely opened by medicine he thought

the pain was relieved. The pulse was quick; the temperature 99° in the morning, rising to 100° in the evening.

He stated that he had always suffered from constipation, but had in other respects been healthy until six weeks ago, when he fell with great force upon the abdomen. He was able to resume his work, but was attacked by pain three weeks afterwards, which was not at first severe but had gradually increased. On examination, a round tumour was discovered in the right iliac region, which was extremely tender upon pressure.

He remained in the same state until December, the tumour not presenting any alteration, his pain being alleviated by the flexing of the thigh on the pelvis, but greatly increased when the slightest motion of the hip was attempted. The bowels acted regularly; the temperature was usually about 101°, and the pulse 116 or 120. After this the pain gradually subsided, the temperature fell, and he was able to walk about the ward. As he was very weak and anæmic he was made an out-patient on March 2nd, 1880.

He was readmitted on June 15th, severe pain having returned in the tumour; the appetite was bad, the temperature high, pulse 120, and the bowels relaxed. The tumour seemed to be situated higher up than formerly, and was very tender on pressure.

In the beginning of July a tumour was noticed in the thigh, which on being opened discharged pus and fæces, whilst the original tumour in the abdomen became smaller and less tender. The wound continued to discharge pus and fæces for some time, and on one occasion blood was passed along with the stool from the anus, but the opening gradually closed, although gas was still expelled from the sinus after the feculent discharge had ceased. He improved in health, and left the hospital in July, after an illness of eleven months' duration.

Now, you will naturally inquire where did the mischief originate in this case? It is clear from the tumour in the iliac region being so tender upon pressure, and the pain being increased by the motion of the thigh, that the inflammation had been in the first instance set up around or behind the cæcum; and we have therefore to ask whether this was the result of ulceration of the mucous membrane, or produced by a perforation of the vermiform appendage? In favour of its having originated in the mucous membrane, are the facts of the patient having been very liable to constipation and having suffered a severe blow on the abdomen; but, on the other hand, if the gut had been perforated at an early period of the case, there would have been more severe inflammatory symptoms on his admission.

I think, therefore, it was more likely due to a perforation of the vermiform appendage, which had produced a chronic abscess behind the cæcum, and that this, by bursting into the intestine, allowed of the escape of decomposing materials into the connective tissue, and thus led to the formation of the abscess in the thigh.

Fæcal abscesses may exist in connection with any part of the intestinal canal, but they vary greatly both in their causes and their effects according to their situation. It will be necessary, therefore, to consider those related to the large and small intestines separately, and I propose on the present occasion to direct your attention to the former only.

In order that a fæcal abscess should result from the perforation of any part of the canal, it is necessary that the ulceration should proceed slowly so that time may be given for any substances that may escape to become enclosed by adhesions ; for the sudden introduction of decomposing matter into the peritoneal cavity always sets up violent and generally fatal peritonitis. It is because the extension of ulceration to the exterior of the intestine is rarely slow that so few cases of abscesses of this character are met with.

In looking over the post-mortem records of this hospital I have only found sixteen cases in which a fæcal abscess is mentioned in connection with the large intestine. Many other cases of communication between the interior of an abdominal abscess and the colon are recorded, but as it is not stated that the contents were of a feculent character, I have not counted them in the above number. As this number is too small to admit of any safe deductions, I have collected from various authors sixty-six cases in which a communication was discovered after death between an abdominal abscess and the large intestine, and in which the contents were of a feculent character.

The situation of the abscesses mentioned in our post-mortem records varied considerably ; thus in two they were connected with the cæcum, in four with the ascend-

ing, in two with the transverse colon, in three with the sigmoid flexure, and in four with the upper part of the rectum. In those I have collected from other sources fifteen were connected with the cæcum, seven with the ascending, seven with the transverse, and six with the descending colon, nine with the sigmoid flexure, and four with the upper part of the rectum. Moreover, as most of the cases terminating favorably had burst or had been opened in the right groin, it is evident that the cæcum, notwithstanding its small length as compared with the other divisions of the large intestine, is the favourite seat of fæcal abscess, and there can be little doubt that the fact that this part is less completely enveloped by the peritoneum, and is therefore in nearer relation to the connective tissue behind it, is the chief reason why such should be the case. An abscess of the kind we are considering may commence external to the gut, and afterwards burst into it, or the ulceration may begin in the mucous membrane. Of the collected cases twenty were of the former class, and thirty-three of the latter.

The origin of the abscesses commencing externally varied greatly; some had originated in the connective tissue around the kidneys, others had their starting-point in a diseased ovary, but more commonly the inflammation began in the connective tissue of the pelvis as the result of irritation of the generative organs, and by bursting inwardly allowed of the escape of the irritating contents of the intestine into the sac. You must not, however, suppose that wherever the bowel is perforated by an abscess from without there is necessarily an escape of fæces into it, for there are numerous cases in our records in which this had not occurred. In all probability much depends upon the size and shape of the opening, which may often act as a valve and permit of the free entrance of pus into the gut without allowing of the exit of its contents.

Ulcerations, commencing internally and producing fæcal abscesses, may be classed into those arising from general

and those produced by local causes; the former include typhoid fever, dysentery, tubercle, and cancer, whilst chronic catarrh and stricture are the most prominent of the latter.

Where fæcal abscess followed typhoid the seat of the ulceration was usually in the small intestine, but I have found two cases where the ascending colon had been perforated after this disease, and allowed of the escape of its contents; and in one, in which details are given, the sac of the abscess was formed by adhesions of the neighbouring organs.

There were six cases arising from dysentery; one was connected with the cæcum, one with the ascending colon, one with the descending colon, one with the sigmoid flexure, and two with the rectum. In only two the abscess was walled in by adhesions of the neighbouring parts, in the others the sac was in the connective tissue. All were cases of very chronic dysentery, for when I have seen perforation in the more acute forms of the disease rapid and fatal peritonitis has been the result. In some of them an abscess had formed in the first instance external to the gut, and afterwards had burst into it.

In eight cases the abscess was the result of tubercular ulceration, and occurred in persons suffering from phthisis. In one the perforation was in the rectum, in one in the sigmoid flexure, and in five in the cæcum, the only remaining case being connected with the transverse colon. In three the walls of the abscess were formed by adhesions of the neighbouring organs, and in five the sac was situated in the connective tissue.

When speaking of perforation of the vermiform appendage I drew your attention to the frequency with which ulcers occurred in that part in cases of phthisis, for out of fifty subjects examined in succession at the London Hospital, ulcers which had not perforated were found in the appendix in only two, and both of these had died of phthisis. The same tendency to ulceration is displayed by the cæcum, although in a smaller degree; and we

cannot therefore wonder that in the majority of cases where a fæcal abscess arises from internal causes in this part of the intestinal tract, a tubercular condition is the most common accompaniment.

Perforation of the cæcum in tubercular persons may arise from an enlargement and suppuration of the glands behind it, the pus thus formed afterwards bursting into the bowel, and it is most difficult, if not impossible, to diagnose during life this condition from the thickened, ulcerated state of the cæcum that occasionally accompanies phthisis.

Fæcal abscesses are much more rare than might have been supposed in cases of cancer of the large intestines, considering how common the complaint is. I have only found four post-mortem examinations of this kind, and in all probability the rarity may be explained by the fact that although perforation is a common result of malignant disease, it almost always takes place suddenly, and therefore before there has been time for the effused materials to be walled in by adhesions. Of the four cases, one was connected with the cæcum, and the sac was formed in the cellular tissue of the iliac fossa, and three were caused by disease of the transverse colon, the walls of the abscess being formed by adhesions of the neighbouring organs. In my own practice I have met with a fæcal abscess in the left groin, resulting from stricture of the rectum, but this is not a common result of cancer of this part.

Two cases are mentioned as having been caused by stricture, the nature of the narrowing not being clearly described; one was in the ascending, and one in the transverse colon, but in both the stricture was at a considerable distance below the abscess.

Thirteen out of thirty-six cases in which the ulceration commenced internally were attributed to catarrh of the mucous surface, and the comparative frequency of this cause of fæcal abscess probably arises from the slowness with which such ulcers often progress. The different anatomical divisions of the large intestine were more equally affected than in the case of tubercular and cancerous ulce-

rations, for three occurred in the cæcum, two in the flexures of the transverse colon, four in the descending colon, three in the sigmoid flexure, and one in the rectum.

As might have been expected from such situations, the walls of the abscesses were formed by adhesions of the neighbouring organs in nine cases, and in only four cases they were situated in the connective tissue. The causes of the ulceration were attributed either to fæcal accumulations or to the irritation produced by foreign bodies. The tendency of fæcal accumulations to excite ulceration is probably greatest when the general health is much depressed, and this was well illustrated in the following case admitted into my wards :

Case 2.—The patient, who was about seventeen years old, was in a state of extreme emaciation, and was sent to the hospital on the supposition that he was suffering from intestinal obstruction.

The boy, who was evidently insane, had obstinately refused all food, as he said "he was too full to eat," and no action of the bowels had taken place for two or three weeks. There was, however, no evidence of obstruction, and notwithstanding that he was forcibly fed, he sank in a day or two from exhaustion.

On post-mortem examination the whole of the viscera proved to be healthy, except that the large intestine was vastly overloaded with fæces, and an ulceration existed in the cæcum which had perforated the peritoneum, but the opening was blocked up by a mass of hard feculent matter, so that none had escaped into the cavity, and consequently peritonitis had not been set up.

I have collected five cases in which a fæcal abscess had formed in the right side of the abdomen, and in which the sinuses resulting from it healed after a foreign body escaped or was extracted ; but as the patients all recovered, it is impossible to say whether the ulceration had commenced in the appendix or in the large intestine.

When you consider the violent symptoms usually set up when decomposing material is introduced into the peritoneum, or is suddenly effused into the connective tissue, you would expect that severe constitutional symptoms would be always present along with a fæcal abscess. This

is by no means invariably the case, for in some the contents are walled in by adhesions, so that they are not brought into contact with the blood-vessels, and consequently absorption does not occur. This is probably also the reason why abscess of the liver is, comparatively, a rare consequence of abscesses of this kind. In some instances, however, decomposition of the contents of the abscess takes place very rapidly, and sloughing of the neighbouring organs is produced along with the constitutional irritation that accompanies such a condition.

When examining other forms of abdominal abscess we found there was a considerable difference in the liability of the sexes to them, but this does not appear to be the case with that we are now considering, for of fifty-three cases twenty-seven occurred in males and twenty-six in females. When we analyse them more carefully, differences appear, which, however, are easily explained; thus, of twenty cases where the abscess began external to the gut only seven were males, the increased liability of the opposite sex having arisen from the greater frequency with which the abscess commences in or around the pelvic viscera. All the dysenteric cases were males, the disease having been in each instance contracted in tropical countries, whilst of seven tubercular cases five were females and only two were males.

As regards the influence of age, twenty-six occurred between twenty and forty years of age, and only two were recorded in children under ten. When fæcal abscess commenced externally, it was most apt to take place between twenty and forty, fourteen out of twenty-two having been at that period of life.

We before found that perforation of the vermiform appendage was more liable to occur in chronic than in acute phthisis, and the same appears to be the rule in the disease we are now examining, for four out of six were above thirty years of age, and none were below twenty. Catarrhal ulceration is most apt to form a fæcal abscess in persons of middle or advanced life, only two out of fifteen being

below thirty, whilst three occurred in individuals above seventy.

It is a matter of importance to remark how frequently, as in Case 1, fæcal abscesses have followed injuries to the abdomen. No doubt in many inflammation is set up in the first instance external to the gut, and the abscess subsequently bursts into it. This was probably the case in the following:

Case 3.—I was consulted respecting a man between fifty and sixty years of age who had some months previously received a severe injury to the abdomen. A short time after the blow the patient experienced some pain in the part, and a small, hard, deep tumour was discovered in the right iliac fossa. This gradually enlarged, and when I saw him the tumour was of considerable size, and deep fluctuation could be felt in it. An opening was made into it, pus and fæces were evacuated, and the surgeon was able during the operation to pass his finger into the large intestine. The fæces were discharged for many months through the wound, but eventually it closed. The small size of the tumour and its hardness in the early stage would render it probable that an abscess had first been formed either in the abdominal walls or near the cæcum, which afterwards opened into the gut, but such an explanation is not applicable to all the cases of ulceration of the colon following an injury.

This is evident from the following case:

Case 4.—A man, forty-two years of age, was admitted into this hospital who stated that he had never had a single day's ill health until ten weeks before, when he was drunk and was roughly handled by the police. Ever since that time he had suffered from pains of the abdomen, which had become suddenly more intense ten days before his admission, and during this period there had been no action of the bowels. After death the cæcum was found adherent to the abdominal parietes, and a small opening was discovered in it, from which fæces exuded as soon as the adhesions were separated. The ascending colon was much dilated, and distended as far as the middle part of the transverse colon, and at this point was an ulceration, one inch and a half wide, extending round the mucous membrane. There was no abscess either in the abdomen or its walls.

In the above case the immediate cause of death seems to have been the perforation of the cæcum produced by the distension arising from the ulceration of the colon, and from the circular shape of that ulcer we might suspect it

to have been of a cancerous character, but this is not stated to have been the case. From the pain having commenced directly after the patient had been roughly handled by the police, I think it more probable that the mucous membrane of the gut had been injured by a blow and had been subsequently separated by sloughing. This is not so improbable as at first sight it might appear to you, for numerous cases are on record where persons who had suffered from a blow to the abdomen afterwards died of peritonitis, and in whom, on post-mortem examination, a perforation of the intestine was discovered, produced by a small ulceration of the coats of the gut.

The previous condition of the health of the patients whose cases have been collected of course varied according to the nature of the disease producing the ulceration. Thus, pain, vomiting, and loss of flesh were the usual symptoms preceding the formation of the abscess in those affected with cancer, whilst signs of phthisis or persistent diarrhœa were observed prior to the development of the abscess in the tubercular cases.

Of those in whom the abscess commenced external to the gut, seven out of fourteen are stated to have previously suffered from pain in some part of the abdomen, in three the first symptom recorded was an attack of rigor, in one the abscess followed parturition, and in one the patient had lately recovered from typhoid fever. Where the ulceration was the result of catarrhal inflammation of the mucous membrane, five out of thirteen are stated to have been long subject to constipation, two to diarrhœa, and three had been liable to attacks of colic or pain in some part of the abdomen. In one case the first sign of ill-health was a sudden plugging of the blood-vessels of the legs, and the ulceration of the colon was, in all probability, the result of a similar condition of the arteries of the intestine, as a clot was discovered in them after death.

Where an abscess commenced external to the gut, and afterwards opened into it, there was in most of the cases recorded no very marked change in the symptoms indicative

of the occurrence. Out of twelve cases three are stated to have suffered during the progress of the malady from vomiting, four from constipation, four from violent diarrhœa, and two from excessive tympanites; the tongue is said to have been coated in one case, and dry, red, and fissured in two others. In seven out of twelve severe pain is recorded to have been present in some part of the abdomen, but it is impossible to say whether this was to be referred to the original abscess or to the subsequent admixture of fæcal matters.

According to my own experience, the symptoms in these cases depend chiefly upon the state of the abscess and the shape and size of the opening. You may perhaps remember I quoted to you when we discussed the subject of perinephritic abscess the case of a gentleman who had an abscess in the right loin, which was coming towards the surface, but who was only suffering from the ordinary symptoms of hectic fever. He was suddenly attacked with rigors, followed by great exhaustion; the pulse was thready, the countenance sunken, the extremities cold, whilst the skin over the tumour assumed a dark-red appearance, the cellular tissue became emphysematous, and the patient died. Here, in all probability, the contents of the intestine had obtained an entrance into the connective tissue, and by absorption into the circulation a fatal result was produced.

Now, let us contrast this with a case lately in my wards, and which many of you had an opportunity of observing. The patient was a woman about thirty years of age, who had been suddenly attacked with pain at the back of the sacrum. She had still constant pain when admitted into the hospital. The thigh was flexed upon the pelvis, and on vaginal examination a distinct fulness could be detected to the left of the uterus. Sudden and severe diarrhœa set in, and pus was observed in the stools; and although the pain was somewhat relieved, her exhaustion rapidly increased. Her friends removed her, so that we had no opportunity of seeing how the case terminated, but I have little doubt she was suffering from abscess of the cellular

tissue of the pelvis, which had burst into the sigmoid flexure of the colon or the upper part of the rectum ; but no absorption of the decomposing materials had taken place, and consequently the only ill effects of the perforation were those of the diarrhœa excited by the contact of the pus with the mucous membrane.

I think then we are justified in concluding that there are two classes of cases ; in one the decomposition set up by the entrance of feculent matter into the abscess induces local gangrene, and the symptoms of septic poisoning ; in the other the bursting of the abscess may afford relief, but is also very apt to set up exhausting diarrhœa from the irritation produced on the mucous membrane of the intestine.

In two out of thirteen cases of fæcal abscess arising from catarrhal ulceration the formation of the abscess was attended by repeated rigors, but pain in some part of the abdomen was the most common accompaniment, and lasted during the whole progress of the case. It was noted as a prominent symptom in nine out of thirteen, but was probably present in all ; in five it is stated to have been in the abdomen, in one in the hypochondrium, in one in the hypogastrium, and in one in each iliac region, and it was generally accompanied by tenderness on pressure.

Frequent vomiting was mentioned in five cases, constipation in five, and severe diarrhœa in seven, but in some constipation had preceded the diarrhœa. There was marked tympanites in four ; the tongue was noticed as brown and dry in one, as coated in one, and as dry, red, and fissured in two cases. Great exhaustion and emaciation seem to have been present in almost every case, and in two the skin was said to have been yellow, probably from jaundice resulting from pyæmia. In two of the cases of fæcal abscess that have come under my own notice, rapid loss of flesh and strength, a quick pulse, fever, a dry, cracked, or brown tongue have been the prominent symptoms, but the patient has not presented the pallor of the lips and skin that so generally accompanies malignant disease.

You will remember that when we were investigating the subject of perforation of the vermiform appendage we found the symptoms were often so slight when it occurred in patients suffering from phthisis that they were readily overlooked, and we shall find the same occurs when a fæcal abscess presents itself in this disease. Out of five cases of this kind rigors were mentioned only once, in only one pain was noted as a prominent symptom, tenderness was mentioned in two, constipation was present in one, and diarrhœa in two. The tongue was red and fissured in one, and ulcerated in one case. I mentioned to you before that a fæcal abscess in phthisical cases usually occurs in the cæcum, and that it may be the result of an ulceration perforating the gut, or of an abscess forming behind it, and subsequently making its way into the intestine. In either case you may find very few indications during life of such a condition.

Case 4.—Many years ago, a man, thirty-two years of age, consulted me on account of symptoms of phthisis. Under treatment he improved, but his cough returned two years afterwards, and on examination, although he complained of no pain, I discovered a hard tumour the size of an egg in the region of the cæcum. It was slightly tender, was well defined and immovable, but it afforded a clear note on light percussion.

On post-mortem examination, in addition to tubercular disease of both lungs, we found numerous ulcerations of the small intestines. The tumour was formed by a mass of enlarged and softened glands behind the cæcum, and at this part of the gut was a large ulcer occupying the greater part of its circumference.

Now, if this patient had lived much longer, in all probability a fæcal abscess would have been produced, but I doubt if there would have been much suffering, or that it would have influenced the progress of the original disease.

There were few distinctive symptoms in the cases of fæcal abscess in persons suffering from dysentery, for the diarrhœa of the original malady remained the prominent symptom; the only change in most cases consisted in an increase of pain and tenderness on pressure, and a rapid loss of strength and flesh. I could not better show you the difficulty of the diagnosis of these cases than by

reading the notes of one admitted into my wards a few years ago.

Case 5.—A boy, aged twelve, was admitted on January 23rd, 1875, affected with dysentery. He had lately returned from the East Indies after a residence there of four years. He had been in good health up to eight months before his admission, when he was attacked with dysentery which had persisted ever since. He complained of pain in the abdomen and frequent diarrhœa, the stools being copious and mixed with shreds of mucus and lymph, but they did not contain blood. He had lost flesh to a great extent, but did not suffer from rigors or sweatings.

The abdomen was large and swollen on each side, especially on the left. The edge of the liver projected below the right hypochondrium, but did not feel hard as if it were affected with lardaceous degeneration; the spleen could be felt below the ribs, extending nearly as far as the crest of the ilium; posteriorly, the liver dulness was greater than normal; over the left loin the note was clear, but the patient complained that when the part was struck "a severe pain ran through him." There was no thickening of the colon and no tenderness, excepting to the left of the umbilicus.

February 9th.—The diarrhœa had increased, and "the evacuations were like gravy soup." There was more constant pain of the abdomen, and he lay on his back with his legs flexed on the pelvis. There was, however, no very marked tenderness on pressure, and only occasional shiverings. On March 1st the pain was still severe, the diarrhœa unabated, the skin dry, and the tongue hard and dry. He died on March 5th.

Post-mortem examination.—There were two abscesses in the liver, both near the surface. The cæcum was ulcerated in one or two parts, but the colon was ulcerated throughout its entire extent. The descending colon was adherent to a part of the small intestine, and a fæcal abscess was situated at this point, being bounded by the adhesions that united the small and large intestines together. The spleen weighed seventeen ounces, and was very firm, but not lardaceous. The other organs were in a normal condition.

The existence of the fæcal abscess was not suspected in this case, and you will readily see how little indication there was of such a condition. The dysentery remained, as at first, the prominent symptom, and although there was tenderness on percussion over the left loin, and the patient lay on his back with his legs drawn up, both being signs of local peritonitis, our attention was directed to the enlargement of the spleen, and it was supposed the peritonitis had originated in the condition of that organ. You

will also remark that there was no abdominal tumour produced by the fæcal abscess, and this is usually the case, in the first stage at least, where the abscess is bounded only by adhesions of the neighbouring organs, instead of being situated in the connective tissue.

We have seen that the symptoms that present themselves in cases of fæcal abscess vary according to the cause producing them. Let us now inquire if there are any physical signs that may assist in their diagnosis.

First, then, as regards the size, shape, or appearance of the tumour. A description of this was recorded in thirty cases, but it varied greatly, as might have been expected, when it was described by so many different observers. It was mentioned as "a swelling in the iliac region" in fifteen cases, as "a well-defined smooth tumour" in three, as "a tumour" in three, as "a hard tumour" in two, as a "brawny swelling" in one, as a "nodular hardness" in two, as "an obscure feeling of tumour" in one, as an "ill-defined elastic tumour" in one, and as "circumscribed peritonitis" in one case. From these descriptions we must draw the conclusion that there is no invariable form of swelling in such cases, and a little reflection will show you that the shape and other conditions of the tumour must vary with its site, the cause of the ulceration producing it, and the nature of its contents. Judging from my own experience, and from the various cases recorded, I think the fæcal tumours of the right side, and especially of those connected with the cæcum, are usually more clearly defined than those in the other parts of the abdomen, chiefly because they are in that region more frequently located in the connective tissue. The "hard," "brawny," and "nodular tumours" were chiefly observed when malignant disease had produced the ulceration, whilst the amount of elasticity in the tumours seems to have been determined by the relative quantity of air and fluid enclosed in the sac.

It is important to observe that fæcal tumours, on account of their being either situated in the connective tissue or

being fixed by adhesions of the neighbouring organs, are not capable of being moved either by the respiration or by the pressure of the hand, and this feature will often enable you to discriminate between them and some other affections with which they are liable to be confounded.

An alteration in the size of a tumour, following an increased action of the bowels, would naturally lead us to suspect that a communication existed between it and the interior of the intestinal tube, and it was noted in six cases that the volume of the swelling was lessened when diarrhœa occurred spontaneously, or was produced by aperient medicines; in only one case it is expressly stated that this did not occur.

Fluctuation was only mentioned in five out of thirty-two cases, but there is no doubt it must have been frequently overlooked. In some that have come under my own observation it has been quite evident, in others it has been doubtful, and the difference, no doubt, depended on the relative amount of fluid and solid contents contained in the sac. In acute cases there is generally œdema of the integuments, and this would often tend to prevent the discovery of fluctuation.

The note elicited by percussion varied, of course, with the nature of the contents of the tumour. It was noted as "dull" in three, as "dull on strong percussion" in four, and as giving a clear note in three cases. Some observers have remarked that the note was clear on slight, but dull on forcible percussion, and this seems to me a very important difference, as it would render the presence of air in the contents of the tumour very probable. It is a still more important physical sign when a swelling that has up to a certain time presented a dull note, suddenly becomes tympanitic on percussion; as it shows either that decomposition has occurred in its contents or that a communication has taken place between it and the intestinal canal.

"Emphysematous crepitation" was recorded to have been present in two cases, and gurgling on pressure in

three. The latter can only take place when the contents are chiefly composed of gas and liquid, and is therefore most likely to be observed when the abscess is enclosed by adhesions of the neighbouring organs.

If, then, we sum up the evidence afforded by an examination of the cases I have collected, it appears that although there are no physical signs that indicate with absolute certainty a fæcal tumour, yet if we should meet with a localised abdominal swelling that was immovable by the respiration or by a moderate amount of pressure of the fingers, whose size and shape altered when diarrhœa occurred, and in which light percussion gave a tympanitic, and a more forcible stroke a dull, sound, or in which an emphysematous sensation was communicated to the fingers, or a gurgling sound was produced by percussion, it would be probably of fæcal origin. This probability would be vastly increased if the history of the case should afford us evidence of any of those morbid conditions of the gut which we have before seen are apt to produce ulceration.

The diagnosis of fæcal tumours connected with the colon is generally very difficult, on account of the numerous organs which are situated near to it. It will be, therefore, necessary to examine them separately according to their position in different parts of the abdomen.

As the most common cause of the disease when the cæcum is the part affected is tuberculosis, you may confound a fæcal tumour in this situation with a thickened and ulcerated cæcum, for in both there may be a clear note on percussion and gurgling on pressure. In thickened cæcum, however, the tumour is less distinct, less painful; it does not vary in size, and the skin over it is not tender or inflamed. We before found that some cases of perforation of the appendix present a swelling in the cæcal region, which affords a gurgling sensation and a clear note on percussion, but these are rarely preceded by signs of ulceration; the symptoms occur suddenly, and they are usually accompanied by constipation instead of diarrhœa.

Fæcal tumours connected with the ascending colon are

very rare, and are most likely to be confounded with cancer. In fæcal abscess there is usually diarrhœa ; in cancer constipation ; the former is not attended with attacks of colic. The temperature is high in abscess, often below the normal in malignant disease. Rapid emaciation and pallor are not such marked symptoms in abscess as in cancer. Diarrhœa often diminishes the size of the tumour in the former, and gurgling on pressure and a tympanitic note on percussion point to fæcal abscess alone.

Fæcal abscess commencing in ulceration of the transverse colon is rarely met with, and when it is the result of catarrh it almost always occurs at the flexure of the gut. Omitting these, I have found only six cases, and four of them were the result of malignant disease, one occurred in a phthisical subject, and one followed an accident. Unless, however, you bear in mind the possibility of the disease presenting itself in this situation, you may make the same mistake as I did in the following case :

Case 6.—A man of middle age received a severe blow on the abdomen whilst washing a carriage. He suffered excessive pain, and was admitted into the London Hospital, where he came under my charge. I saw him only once or twice before he died, but he complained of constant pain in the abdomen and vomiting of all food. Although he had lost flesh, it was remarked that his lips were not pallid, and he had not the cachectic look of a person dying of malignant disease. There was a large diffused swelling above the umbilicus, which was red on the surface and very tender, the veins over it being much enlarged. I had no hesitation in diagnosing cancer of the stomach, but on post-mortem examination there was no malignant growth in any part, the stomach was quite healthy, but there was a large fæcal abscess connected with the transverse colon.

You may have to decide in tumours of the lateral parts of the abdomen between a fæcal abscess and kidney disease, as in both you may find an immovable tumour with a tympanitic sound on percussion over it, and you must trust chiefly to the history of the case to enable you to discriminate between them. Fæcal abscesses here are usually preceded by an accident, by symptoms of stricture of the gut, or by constipation or diarrhœa ; whilst where you suspect kidney disease you must ascertain if the patient

suffers from stricture of the urethra or diseased bladder, or if he has previously passed calculi, or albumen or blood in the urine. Then a fæcal abscess is more irregular in shape, and may present a gurgle on pressure, or may be much reduced in size by aperients, or the integuments over it may be inflamed or œdematous.

Fæcal abscesses connected with ulcerations of the sigmoid flexure are usually the result of catarrhal dysentery or of stricture of this part or of the upper part of the rectum. In the cases that have come under my own notice the tumours have been ill defined, their walls being formed by the adhesion of the neighbouring organs, and there is, I think, a tendency to come to the surface more rapidly in this than in other situations.

The treatment of fæcal abscesses is, of course, mainly surgical; and an opening should be made as soon as the diagnosis is determined. When there is any reasonable doubt as to the nature of the tumour it is wiser to pass an aspirator into it than allow it to remain unexplored for any considerable time. In case of an operation being performed, you must bear in mind that the opening should be very free, as sloughing of the integuments is apt to occur from the irritation set up by the contact of decomposing discharges.

There are, however, one or two points as regards the medical treatment of these cases worthy of discussion; and one of the most important is, Should purgatives be employed? You might reasonably object to their use on the supposition that, by increasing the peristaltic action of the intestines, the contents of the sac would be increased; but experience does not show this to be the case. On the contrary, I have already had occasion to mention to you that diarrhœa, whether occurring spontaneously or as the result of medicine, has often been found to lessen the size of the swelling, and that, consequently, purgatives may be of use in the diagnosis of the disease. They may be also useful in enabling us to distinguish between a fæcal abscess and a fæcal accumulation in the colon. In such a case you

should watch not only the effects of the aperient on the size of the tumour, but also whether there are scybala in the evacuations. But the administration of purgatives, and especially of calomel, seems often to afford relief, not only by removing part of the contents of the sac, but perhaps also by altering the character of the fæces, and lessening their irritating nature.

Opium must, of course, be resorted to, for the purpose of relieving pain, and the dose should be in proportion to the effect required. I have seen leeches, blisters, and iodine used in these cases, especially in the earlier period, but without beneficial results; and as soon as the real nature of the case is suspected, I would advise you to content yourselves with the application of hot poultices and fomentations to the painful part, and have recourse to surgical measures as early as possible.

LECTURE IV.

ON FÆCAL ABSCESSES CONNECTED WITH THE SMALL INTESTINES.

Gentlemen,—In a former lecture we discussed the subject of fæcal abscesses arising from ulceration of the colon, and we found it was necessary to consider them separately from those connected with the small intestines, on account of the great difference in the structure, functions, and anatomical relations of these sections of the digestive tube. I now wish to direct your attention to abscesses connected with the other portions of the intestinal canal, but it will be necessary to examine those of the duodenum separately, as this part differs in many important particulars from the rest of the small intestines.

When it is considered how often we meet with perforation of the ileum in post-mortem examinations, we should expect frequently to find an abscess connected with this part; but such is by no means the case. It not unfrequently happens, indeed, that in tubercular peritonitis in children two or more loops of intestine are united by adhesions, which wall in a collection of pus communicating with the interior of the gut; but as in such instances there is rarely any external tumour, and as there are no symptoms differing from those of an ordinary case of tubercular peritonitis, we shall at present reject such cases and direct our attention only to those in which there are symptoms or physical signs that would enable us to suspect the existence of an abscess.

On examining the post-mortem records of this hospital,

I have met with five cases of fæcal abscess connected with the small intestines, and I have been able to collect from various authors twenty-five others in which the presence of an abdominal tumour produced by this affection had been remarked during life, and in which a detailed account is given of the appearances discovered after death. It is not, however, difficult to explain the rarity of fæcal abscess connected with the small intestines, for their mobility, the rapidity with which ulceration proceeds in them, and the liquid nature of their contents are sufficient to point out why a general rather than a local inflammation should usually follow perforation of their coats.

If we analyse the cases I have collected, we find that the numbers resulting from the various conditions capable of producing fæcal abscesses are very different from those we before met with when we examined the same affection as connected with the large intestine. Thus three commenced in inflammation around the pelvic organs, which had ended in suppuration, bursting into the lower part of the small intestines, and in all of them there was general peritonitis, in addition to the adhesions surrounding the abscess. In one, which occurred in this hospital, the small intestines had been perforated by an abscess which seemed to have originated in an ulceration of the colon produced by dysentery. In another in our records there was a tumour the size of a child's head connected with the lower part of the ileum ; the walls were one inch thick and composed of a cancerous growth, the coats of the intestine being completely destroyed and the two ends of the healthy portions of the gut being continuous with the fæcal cavity thus formed. In a third in our records a very rare condition was discovered : the coils of the jejunum were united by adhesions, their contents had escaped from an opening between them, and the cause of the perforation was found to be the distension produced by a narrowing of the ileum resulting from a small tumour that projected into the cavity of the intestine.

In eight out of twenty-five cases the fæcal abscess had

followed an injury to the abdomen. There can be little doubt that this proportion is in excess of what it would be if every case of fæcal abscess had been recorded, but cases produced by accident are especially apt to be noted, as the symptoms are from the first usually well marked, and immediately follow the injury. As this part of our subject is of great practical importance, and has scarcely received the amount of attention it deserves, it will be advisable for us to consider for a few minutes the various ways in which an injury is capable of producing ulceration of the small intestine.

In the first place, then, a blow on the abdomen often sets up either general or local peritonitis, which may terminate by adhesion of some of the loops of the intestine to each other and to the abdominal parietes, these loops being apt to be bent at angles more or less acute. It is at these sharp bends that ulceration often commences, and if it should proceed slowly a fæcal abscess may result. General adhesions were mentioned in six out of eight cases in which the abscess had resulted from injuries; and in five out of the twenty-five cases of fæcal abscess it is recorded that the perforation took place at an angle of a portion of gut fixed by adhesion; this occurred not only when inflammation had followed the receipt of injuries, but also in tubercular peritonitis, and in two instances where there had been only a local non-tubercular inflammation of the peritoneum. It is not difficult to explain why a portion of gut sharply bent by adhesions should be more liable to ulceration than when it is in its normal condition, for the flexure must tend to congest its blood-vessels as well as impede the transmission of its contents.

Secondly, a slight blow may set up suppuration in the abdominal walls or in the connective tissue behind the peritoneum, which may open into any part of the canal. A case is mentioned in our records in 1839 where a boy in delicate health received a blow on the abdomen from a schoolfellow, which occasioned inflammation that terminated his life in five days. On post-mortem examination, three

abscesses were found behind the peritoneum, which had been the cause of his death. No opening, however, had taken place into the intestine, although we can imagine how easily such an occurrence might have taken place if the patient's life had been prolonged.

Thirdly, in three of the cases a very small opening in the intestine was discovered after death, and it was believed by those that recorded them that the perforations were the result of previous injury. It seems difficult to understand how an opening the size of a shilling, as is mentioned in one instance, could fail to allow of an immediate escape of the intestinal contents, and thus give rise to rapidly fatal peritonitis, unless we assume that the canal was quite empty at the time of the accident. As this would be rarely the case, I think it is more probable that only one of the coats was in the first instance ruptured, and that the perforation of the canal took place at a subsequent period by an extension of an ulcerative process.

Of the twenty-five collected cases only seven are noted as resulting from a tubercular affection of the peritoneum. Such a proportion is, however, much below what it would have been if all that came under observation had been recorded, for the occurrence of an abscess of this kind in phthisical cases may take place without producing any very marked variation in the symptoms or deterioration in the condition of the patient, and is consequently apt to be looked upon only as an accident of the general disease. Fæcal abscess connected with this portion of the intestinal canal is, however, so generally the result of this cause, that whenever we are able to exclude the effects of accident and previous peritonitis, we shall be justified in assuming any case that may present itself as probably due to tuberculosis.

Tubercular peritonitis, as you are often told, and as you see so frequently exemplified in the wards, presents itself clinically under three forms: in one the onset of the complaint is sudden, its course rapid, and often closely simulates typhoid fever; in the second there are at first the same acute symptoms, but these soon subside, and an

affection of the lungs or some other organ becomes the more prominent manifestation of the disease; whilst in the third the symptoms are from the first subacute, and the malady runs a more chronic course. Now, it is in this latter form that, according to my experience, fæcal abscess is most apt to take place, for the intestines become generally adherent, and any escape from the canal is liable to be walled in by the neighbouring viscera; and in support of this opinion it may be remarked that in six out of seven of the cases it is stated that there were general adhesions of all parts of the peritoneal cavity. The ulceration may commence either on the mucous membrane or externally. In two of the seven cases ulcerations of the mucous membrane are noted as having been unusually extensive, and in three there were also ulcerations of the colon. Perforation, as has been before mentioned, was found to be most apt to occur at any sharp bend of an adherent loop of the intestine; on the other hand, three are described as having commenced as "encysted peritonitis," the pus having subsequently made its way into the canal. In all cases the walls of the abscess were formed by the adherent viscera or by thickened membranes. In one instance discharge of feculent matter took place at the umbilicus, in another through the obturator foramen; but generally the abscess was only discovered after death.

The earliest symptoms of the cases of fæcal abscess that I have collected varied according to the disease that gave rise to the ulceration of the intestine. For example:

Case 1.—A boy was treated in this hospital for typhoid fever, which ran its usual course, and on his recovery he was sent into the country for change of air. Five weeks afterwards he was suddenly attacked with pain in the abdomen, loss of appetite, and constant vomiting, and was re-admitted into the hospital, where he died. On post-mortem examination numerous ulcerations were found in both the small and large intestines, there were also extensive adhesions between the coils, and an abscess containing fæcal matter communicated with one of the adherent loops of the gut.

When the abscess resulted from an accident, the first symptoms were pain of the abdomen and vomiting, and in

some instances collapse. In tubercular cases pain of the abdomen and vomiting were also the earliest indications of the disease; in one the pain and vomiting were ushered in with rigors.

As in every instance there was general or local peritonitis, the symptoms during the progress of the malady were only indicative of that condition; indeed, a fæcal abscess was rarely suspected during the life of the patient. Vomiting, pain of the abdomen, and tenderness on pressure constituted the most prominent subjects of complaint. In two instances blood was remarked in the stools, and diarrhœa is recorded as having been present in one quarter of the cases.

In seven cases a more or less defined swelling was observed during life, in one a circumscribed tumour is mentioned as being present near the umbilicus, and in another a tumour was noted at the hypogastrium, all of these being cases of tubercular peritonitis. In a case where the ulceration arose from a sharp bend in a loop of intestines produced by adhesions, an abscess presented itself in the thigh and was opened; in another, arising from a similar cause, the pus was discharged at the groin.

I now propose, gentlemen, that we should direct our attention to abscesses connected with the duodenum, and I must first remind you of the differences in the position and relations of this part, as compared with those of the other sections of the small intestine. Instead of having a complete investment of peritoneum, its second and third divisions are only covered by this membrane in front, and are therefore in immediate relation with the connective tissue behind; and, as a result of this arrangement, perforating ulcers may produce abscesses that may burrow in different directions, and may present themselves at a considerable distance from their point of origin. Then again, the duodenum is fixed and surrounded by numerous important organs, such as the liver, gall-bladder, kidney, and colon, all of which are liable to acute inflammation, the product of which may discharge itself into this portion of

the intestinal canal. I cannot better show the difference between an abscess of this part and those we have been lately considering than by reading to you the notes of a case for which I am indebted to the kindness of my friend and colleague, Mr. Rivington.

Case 2.—William C—, aged nineteen, plasterer, was admitted under the care of Mr. Rivington on November 1st, 1881. In the afternoon he had fallen upon his abdomen from a height of twelve feet; he was picked up by his fellow-workmen and carried home. He vomited everything he took, and was brought to the hospital the same evening. Very little history of his previous state of health could be obtained, but it was stated by his friends that he had been drinking heavily for some time, and that the vomiting had commenced two days before the accident.

He had, on admission, a pinched and anxious face, pulse very feeble, skin hot and bathed with perspiration, and he complained of slight pain in the hypogastric region; temperature 100·4°. He made no complaint of any severe pain.

Nov. 3rd.—The pain was localised to the right inguinal region; bowels confined.

7th.—He was very restless, and had fixed pain in the right inguinal region; diarrhœa for two days.

15th.—He seemed to be in a typhoid condition; fulness was noticed in the right inguinal region, and there was some dulness there on percussion.

18th.—There was a distinct fulness close to the pubes in the right inguinal region, which was hot and tender; the stools were formed, but offensive.

He gradually improved after this date, and left the hospital on December 24th. His temperature varied between 100° and 103° until November 21st, after which it rose every evening to 102°, falling in the morning to the normal point.

He was readmitted on February 1st, 1882. He was then somewhat emaciated, his cheeks thin and flushed, and his expression anxious. There was a hard swelling in the right groin above and to the right of Poupart's ligament, which fluctuated with an emphysematous crackling, as if air and fluid were intermixed; bowels opened daily. He had little pain or tenderness over the abdomen.

10th.—An incision was made into the tumour, and a large quantity of yellowish feculent pus was evacuated.

27th.—The discharge was feculent and profuse, and pressure on any part of the abdomen caused a large quantity to be evacuated.

June 14th.—The sinus was more freely opened, and a large amount of fæcal matter removed.

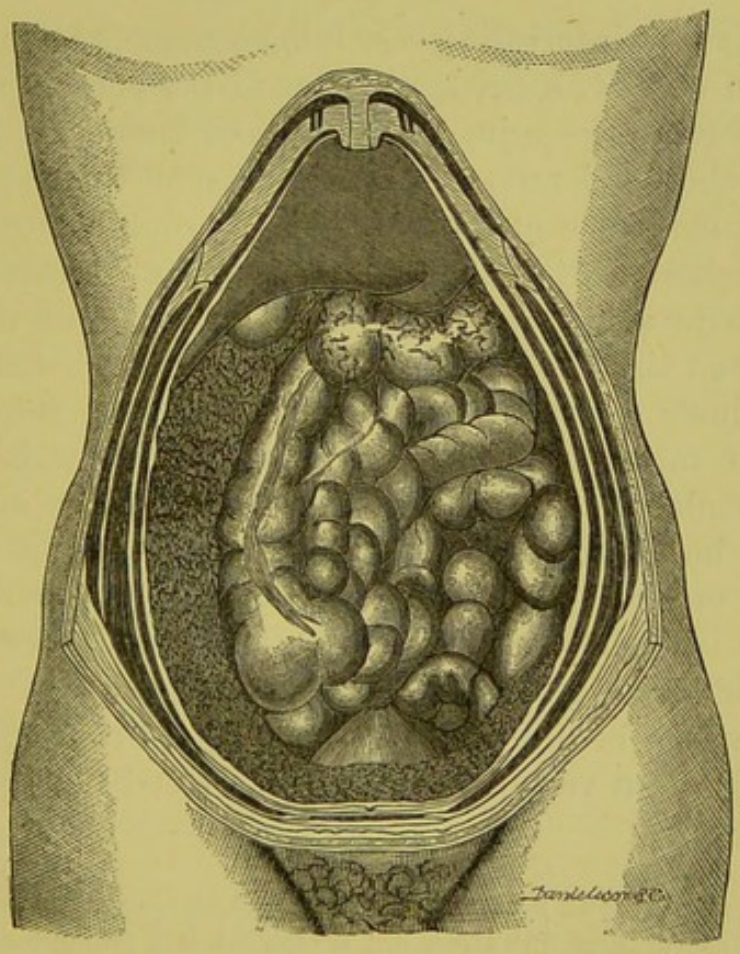
28th.—Diarrhœa came on, and he became much weaker.

He lingered until July 31st, when he sank from exhaustion, nine

months after the receipt of the accident. The temperature always rose in the evening to 101° or 102°, and generally fell to the normal point in the morning.

Post-mortem examination.—The body was so much wasted that it looked as if the patient had died of starvation. On opening the abdomen a channel was discovered extending from the under surface of the liver to Poupart's ligament on the right side; it was situated behind the ascending colon, and was about two and a half inches wide. The roof

FIG. 4.



Sketch of Mr. Rivington's case of peri-duodenal abscess.

and inner wall were formed of thickened peritoneum and the adhering gut, the floor by the thickened fascia covering the quadratus lumborum and the ileo-psoas, the outer wall by the thickened transversalis fascia, and there was a free opening at Poupart's ligament, where was a fæcal-stained cavity, supposed, at first sight, to be formed of the gut adhering to the abdominal wall. The lower horizontal limb of the channel ran behind the pubes, and formed a slightly sacculuted end in the left groin.

The channel contained no solid fæces, but its walls were coated with a brownish-yellow fæcal deposit. As it was supposed there might be some connection with the intestines, water was injected into the colon and into the small intestines, but none escaped until it reached the duodenum, from which part it flowed out in a large stream into the upper extremity of the channel, and swept downwards to Poupart's ligament. At the point of escape the duodenum presented an ulceration the size of a sixpence, with thickened edges, about five inches and a half from the pylorus, which had perforated all the coats and communicated with the channel. All the other organs of the body were healthy (see Fig. 4).

In this very interesting case it is impossible to determine, from the want of a proper history of the condition of the patient before the injury, if there had been previously an ulcer of the duodenum; but whether such was the case or not, it is evident that the intestine was ruptured by the fall. The accident occurred at three in the afternoon, two or three hours after the usual dinner-hour of the labouring class, when the duodenum would be probably distended by the products of the gastric digestion, and therefore most liable to suffer from a severe blow. The vomiting and partial collapse in which he was found on his admission into the hospital pointed to some grave injury of the abdominal organs, whilst the complaint of pain in the right groin at that time seems to prove that the intestinal contents had already found their way into and down the connective tissue behind the peritoneum. This conclusion is supported by a very similar case described by Mr. George Pollock.

Case 3.—"A young man was admitted into St. George's Hospital with symptoms of ruptured intestine, but somewhat less prominently marked than is usually observed when such an injury has occurred, so much so that we hesitated to give a positive opinion as to the exact amount or situation of the mischief. Under treatment for a few days he seemed to improve. Then worse symptoms set in, and he died twelve days after the accident. The duodenum was found lacerated behind the peritoneum. Its contents had escaped and had set up suppuration, which had travelled down in front of the right kidney behind the peritoneum, as low as the right iliac fossa."*

* Holmes's 'System of Surgery,' vol. i, p. 878.

These cases are most valuable, not only in proving that injuries of the small intestines may, under certain circumstances, perhaps end in recovery, but also in showing that the part to which the pain is referred may be at a great distance from the actual site of the lesion. In both suppuration was established in the connective tissue behind the peritoneum; and in Mr. Rivington's case an abscess presented itself in the neighbourhood of the bladder, and was opened in the groin.

I have, gentlemen, in previous lectures, prefaced the consideration of each subject with one or two cases which might serve as illustrations of the usual course of the disease we were discussing, but on the present occasion I have departed from this plan. The two examples I have just quoted are intended to show the differences that may exist between abscesses connected with the duodenum and those of other parts of the small intestine, but cases of this sort are so extremely rare that you are not likely yourselves to encounter them. In the course of my reading I have not met with any others precisely similar as regards the length of time the patient lived after the accident, or where the symptoms of suppuration of the connective tissue so rapidly followed the injury.

When examining abscesses connected with the other portions of the small intestines, we found they were most frequently due to tubercular disease, but this does not seem to be the case with respect to those of the duodenum. In our post-mortem records I have only been able to discover five instances of peri-duodenal abscess; in three the mischief had been caused by the perforation of duodenal ulcers, in one by suppuration set up by an impacted gall-stone, and in one by tubercular disease of the kidney, which had produced a perinephritic abscess that burst into the duodenum. I have collected twenty-nine cases (including the above) from various authors, and of these eighteen originated in ulcers of the duodenum, three in chronic ulcers of the stomach, five in suppuration in the

neighbourhood of the gall-bladder, and one in what was believed to have been an old hydatid cyst of the liver.

Let us, in the first place, examine the cases that have arisen from ulceration in the duodenum itself. You are aware that the stomach differs from the other parts of the digestive tube in its greater liability to the "round," or, as it is often termed, the "perforating" ulcer; and the mucous membrane of the duodenum also presents instances of the same kind of lesion. It is, however, much more rare, for only five post-mortem examinations of duodenal ulcer are recorded in our books during a period in which there are noted sixty-nine fatal cases of gastric ulcer. The usual site in the cases I have collected of the ulcers producing abscess was in the superior portion of the duodenum, where it is covered, like the stomach, by peritoneum; for of ten, eight are stated to have been situated in this locality, one was in the descending and one in the transverse portion; in the remainder the site is not stated. This greater tendency of the superior portion to the production of abscess you must refer to the fact that it is the part that is most subject to ulceration; thus, Kraus states that of sixteen cases of duodenal ulcer he had collected, twelve were situated in this part of the gut. It would appear that acute ulcers are but little apt to set up abscess, as they generally destroy life either by hæmorrhage or by perforation into the cavity of the peritoneum, for in only one instance of those I have collected are the edges stated to have been sharp; in all the others they are described as "round" or "thickened." The materials forming the walls of the abscess varied greatly; thus, in ten out of eighteen they were formed by the adhesion of some of the neighbouring viscera, in two the pus was contained in a cavity in the substance of the pancreas, and in five suppuration had taken place in the connective tissue behind the intestine, and had spread from that part in different directions. In most instances it is worthy of notice that the abscess might have been safely reached by a surgical operation.

It is a common remark that no important part of the animal frame can become the seat of disease without other organs being also affected, and abscesses arising from ulcerations of the duodenum present no exception to this rule. In one out of eighteen the duodenum is said to have been dilated, in two its calibre was contracted, in five the stomach was found to be greatly dilated, and in two the spleen was much enlarged. The dilatation of the stomach is, I suspect, a much more frequent accompaniment of chronic duodenal ulcer than might be supposed from these figures, and may be a useful sign in the diagnosis of such cases. In only two a tubercular condition of the lungs is mentioned.

In five instances the abscess originated in the neighbourhood of the gall-bladder, and afterwards burst into the duodenum. In each case it seems to have been the result of irritation set up by gall-stones, but in one concretions could not be discovered, although the ducts were greatly dilated, pointing to the previous existence of some obstruction to the free exit of the bile. The exact place at which the pus had been discharged into the intestine is only mentioned in two cases; in one it was into the superior and in the other into the descending portion. In all the sac was formed by adhesions, and no case is recorded in which suppuration was set up in the connective tissue. This is of course what might have been expected, as the abscess in most cases originates in suppuration of the gall-bladder itself. In two instances the abscess was situated at a little distance from the duodenum, and opened into it by means of a sinus. In one the abscess was produced by the irritation of a malignant tumour that involved the gall-bladder and ducts, but no mention is made of the presence of a calculus.

The cases I have collected throw but little light upon the causation of duodenal abscess. Of course when they originated from gall-stones, hydatid cysts, or perinephritic abscesses, it is easy to account for them, but what we are chiefly concerned with is to ascertain what circumstances

tend to produce the chronic ulcers of the gut that by perforation of the intestinal walls usually give rise to them.

Statistical inquiries have proved that duodenal ulcers are most common in the male sex, and chiefly occur between thirty and fifty years of age. Now, of eleven cases of duodenal abscess, nine were males and only two females; and only one occurred below twenty years of age, four between thirty and fifty, and three above fifty years of age. In all probability, ulcers in this, as in other parts of the gastro-intestinal tract, are most apt to perforate rapidly in the young, and it is only as age advances that there is a tendency to a slow process of ulceration, and consequently to the formation of adhesions and abscess around the gut.

As duodenal abscesses may arise from so many different causes, it is evident that the symptoms and course of the disease must vary accordingly. Let us, then, first consider the cases that have been recorded as having resulted from simple ulcers in this portion of the intestinal canal. I have been able to collect only fourteen of this class in which a history of the symptoms is given, and in some of them the details are unfortunately very scanty. They were all of long duration; thus, in one the symptoms of ulcer had existed for eight, in another for seven, in a third for three years, and in one for twelve months, whilst in three they are mentioned as having been present for "a long time." You will remember that we before found the ulcerations after death were always stated to have had thick or round edges, so that there is no doubt the quickly spreading ulcers destroy life rapidly, and it is only in such as have been long in a quiescent state that external adhesions occur and the formation of an abscess becomes possible.

In all of the cases the patients had previously enjoyed good health, with the exception of one who had suffered from cough and slight hæmoptysis, and in whom, after death, emphysema of the lungs was found.

Pain was the prominent symptom in the majority of the

cases; in some it came on one hour or at a later period after food, in others it occurred occasionally, the patient being free from suffering in the intervals. In one instance it was looked upon as neuralgia of the cœliac plexus; in another the pain is described as radiating from the epigastrium to the right hip. In two cases there was no complaint of pain, but only a sensation of fulness after eating, until at last more severe symptoms suddenly made their appearance. Vomiting was present in most of the cases, but was by no means so general a symptom as pain. Usually the food last taken was alone rejected, with immediate relief of the pain, but in one case the fluid was intensely sour and the stomach was found after death to be much dilated.

In the majority there was either hæmatemesis or blood was passed from the bowels. In some this occurred frequently, in others only once, but it was usually profuse, and in one the blood is mentioned as having been passed in dark clots.

Loss of flesh was a prominent symptom in all the cases, and ulceration in this locality seems to produce a more marked effect on the general health than when the stomach only is affected. Want of appetite is not especially noted, but in one patient it is stated that the appetite continued good until near the termination of the illness, when it quite disappeared. Paleness of the skin is generally recorded as having been present; some are described as "anæmic," others as "earthy-coloured," and some were "like persons suffering from cancer." No doubt this anæmia arose partially from the hæmorrhages to which the patients were liable, but it must also be attributed to the disturbance of nutrition resulting from the ulceration.

The cases as a rule, after continuing for a length of time, terminated suddenly. In only one the duration of the final attack was three weeks, when the patient died of pleurisy. Most of them were carried off by hæmatemesis or by perforation of the peritoneum, three sank

from exhaustion, and one died of suppuration of the lungs and of the parotid gland.

You would of course expect to find considerable differences in the symptoms and course of a duodenal abscess when it originated from irritation of the biliary passages, and when it was the result of a duodenal ulcer. I cannot show the distinction more clearly than by quoting the following case from our post-mortem records :

Case 4.—A man, thirty-five years of age, had been affected with jaundice four years before his admission into the hospital. He stated that it had come on very gradually, and had lasted without intermission for nearly three years. At the end of this time he was attacked with a severe pain of the left side and across the abdomen, and on the subsidence of this the jaundice gradually disappeared. Five weeks before his admission he had a severe rigor, followed by delirium. When admitted he was suffering from jaundice, and a mass could be felt occupying the right side of the epigastrium, which seemed more clearly defined than would have been the case if it had consisted of an enlargement of the liver. The left lobe could be felt projecting below the ribs ; the mass moved with the respiration, but the gall-bladder could not be distinguished.

Four days after his admission he is stated to have had no pain, the stools were natural in colour, but he had been sick and had vomited. On the sixth day he had a severe rigor followed by sweating, the temperature reaching 103·4°, and a severe rigor occurred again on the eighth day. On the tenth day jaundice was remarked as still remaining, and there were repeated rigors on the twelfth day. On the fifteenth day he complained of a peculiar sensation at the epigastrium, and brought up a quantity of dark-coloured blood. On the following day he suffered severe pain in the epigastrium, and rapidly sank.

At the post-mortem examination a gall-stone, the size of a filbert, was found to be impacted in the common duct ; the gall-bladder was destroyed by suppuration, and a large sinus extended between the gall-bladder and the duodenum, which were united together ; in the substance of the liver were numerous abscesses ; there was also an abscess deeply placed in front of the left kidney.

Now, the first point that will strike you is that up to five weeks before the patient's illness he was in good health, which is a marked difference from the long-standing pain, vomiting, and emaciation we before found in persons who were affected with an abscess produced by ulceration of the mucous membrane of the duodenum. There was also a history of chronic jaundice, from which he had recovered ;

and attacks of colic or of jaundice are also recorded as having been present in other cases of a similar nature I have been able to collect. A sudden onset had also been observed in them as in the foregoing case, and was no doubt dependent on the mischief set up by the irritation of biliary calculi. Repeated rigors did not constitute a prominent symptom in the former class of cases, but in that just related it was probably dependent on the formation of the hepatic abscesses discovered on post-mortem examination. In duodenal abscess arising from internal ulceration, hæmatemesis or the passage of blood by stool was one of the symptoms most commonly remarked, and I have also found one or other of these in almost all the cases I have been able to collect where the abscess had resulted from irritation of the biliary passages.

As regards physical signs, I have only been able to collect nine cases in which these are given with sufficient detail to allow of definite conclusions being drawn from them, and it should be borne in mind that a swelling may not be detected when the abscess is situated very deeply, and also that a tumour may, as we have before seen, present itself at a considerable distance from the duodenum when suppuration has extended into the connective tissue. A tumour was discovered in the epigastrium, or region of the liver, in seven out of the nine cases ; in one it was situated in the right iliac region, and in one at the back of the right shoulder. It was mentioned as being visible in only three cases, but in all probability this point may have been omitted in the records of many others. It was "hard" in three, and "soft" or "elastic" in two.

The note on percussion was "tympanitic" in four cases, and in one a metallic sound was produced by the shaking of the patient. In one the liver and heart are stated to have been displaced upwards by the large size of the tumour. Variations in the percussion note are noticed in only one case, and in this it is said that the tumour remained fixed on full inspiration, but that the line of dulness varied according to the position of the patient.

In one only is it mentioned that the contents of the tumour were influenced by the action of the intestines, the note on percussion being much clearer when diarrhœa was present. In some of the abscesses in which there is a communication with the duodenum, physical signs present themselves closely simulating those of pneumothorax, but be must defer their consideration until we examine the subject of abscesses connected with the stomach.

I need scarcely say that the diagnosis of an abscess connected with the duodenum must be a matter of great difficulty on account of the various conditions which may give rise to it, the different directions the pus may follow, and the great depth at which this portion of the intestinal canal is situated. But, in addition to this, it is very difficult to make out the exact limits or even the existence of a painful tumour situated in this locality, for the patient usually contracts his muscles directly pressure is made over it, so that they become as hard and unyielding as a board. When, however, you have been able to satisfy yourself of the presence of a tumour, you have to consider whether it is an abscess, carcinoma of the liver, stomach, or peritoneum, or perhaps only a fæcal accumulation.

In the first place, then, you must bear in mind that an abscess connected with the duodenum is, as we have before found, almost always the result of a very chronic ulceration of the gut, or of the irritation set up by gall-stones.

In chronic ulceration, the patient will have suffered for many months or years from pain after food or from severe attacks of pain attended by vomiting, or from profuse hæmatemesis or the passage of blood by stool. In cases of cancer the progress of the case is much more rapid, the patient seldom living more than nine or twelve months after its commencement; the emaciation is more marked; the hæmatemesis, if present, more frequent and smaller in amount. In abscess near the gall-bladder the onset of the symptoms is sudden, the progress rapid, and there is usually a history of colic or of jaundice. In abscess from

either cause the temperature is high, whilst in cancer it is often below the normal point.

The tumour in duodenal abscess is less defined and more tender than in cancer, and percussion often affords a tympanitic note or a splash, as if the contents were composed of liquid and of gas, or, in other cases, the line of dulness varies with the position of the patient. In the case of fæcal accumulation the temperature is not elevated; there is a history of constipation; the tumour is dull on percussion, and when firmly pressed upon it seems to give way before the fingers, as though an indentation were thereby produced in its substance. When an abscess has commenced in the peritoneum, and afterwards burst into the gut, you will find, in addition to the signs of a tumour filled with gas or fluid, a history of diarrhœa and localised pain accompanied by fever, the temperature remains high, and the auscultation and percussion usually afford evidences of a tubercular condition of the lungs.

We will defer our consideration of the treatment of these cases until we discuss the subject of abscesses connected with the stomach.

LECTURE V.

ON PERINEPHRITIC ABSCESS.

Gentlemen,—It occasionally happens that inflammation attacks the connective tissue surrounding the kidney, either as a result or independent of an affection of the organ itself, and a very dangerous condition is thus produced. This is, however, rare; and as only a few cases fall under the observation of any single practitioner, the disease scarcely attracted general notice until the writings of Rayer drew attention to it. In the early stages the symptoms are generally obscure, and the appearance of a tumour in the renal region is often the first circumstance that shows the practitioner the real nature of the malady he has to treat. I have selected for our consideration two of the cases that have come under my own observation, one being an instance of the chronic and the other of the acute form of the disease; and these will, I hope, serve to show you the ordinary course of the complaint, as well as some of the differences in the symptoms that present themselves in practice.

Case 1.—A man, aged twenty-one, was admitted into my wards on July 27th, 1882, complaining of pain in the right hypochondrium and loin, which were tender upon pressure, and also of numbness and pain in the right thigh and leg. He was very weak, had lost flesh, and complained of constant thirst. The temperature varied, generally falling in the morning, but rising to 100° or 101° in the evening. The bowels were quite regular; the urine amounted to fifty ounces daily, and was free from blood and albumen. A firm body could be felt in the right hypochondrium, of a rounded shape, and very tender on pressure. It extended from below the ribs to near the crest of the ilium, did not move

with deep inspiration nor with the pressure of the hand, and the percussion note in front of it was tympanitic.

He stated that he had never suffered from any accident, but five months before his admission he experienced pain in the loins, which at first affected both sides equally, but gradually became located in the right. It was so severe as to prevent sleep, but had latterly been somewhat alleviated. Ten weeks before his admission a swelling was noticed in the right side of the abdomen; his urine was at that time thick, but he had never passed blood or gravel. He had suffered from gonorrhœa four years ago, but never had syphilis.

The pain gradually diminished under treatment, but on September 19th the tumour was noticed to be more tender on pressure than before. The right loin seemed to be a little hotter than the left, but there was no tumour posteriorly, and no œdema or redness of the skin, although there was a dull note on percussion from the last rib to the crest of the ilium. He stated that he passed urine in a small stream, but on the introduction of a catheter neither stricture of the urethra nor calculus in the bladder could be discovered, and there was no swelling of the prostate, testis, or epididymis. Some pus and blood-cells had been noticed in the urine from time to time; no albumen was present. The temperature was still variable, sometimes rising to 102° at night, and falling to the normal point in the morning.

For some weeks after this date he seemed to improve in his general health, gaining eighteen pounds in weight, but the tumour remained unaltered. For a time he kept his right thigh flexed on account of the pain, but this gradually passed away, and he was able to get out of bed.

In the middle of November it was first noticed that the liver was somewhat enlarged, and that its edge projected slightly below the ribs. Towards the end of this month the pain in the right loin became more severe, the skin over it became hotter than on the opposite side, the pain in the right leg also increased, but no fluctuation could be felt in the tumour.

In the middle of December slight fluctuation could be felt in two points, and on one of these being opened six ounces of pus were evacuated, and a drainage-tube was inserted in the wound. He was greatly relieved as regards pain, although only small quantities of pus came away.

February 1st, 1883, a slight amount of albumen was detected in the urine, and this gradually increased until the quantity became very large; continuous diarrhœa came on, and he gradually died from exhaustion in the middle of February, after an illness of twelve months' duration.

Post-mortem examination.—There was a considerable amount of fibroid thickening over the vertebræ of the right side, and the bone was a little softened and discoloured, but not otherwise diseased. There was a large abscess behind and below the right kidney, there was neither calculus nor abscess of the kidney, and there was no stricture and no dis-

ease of the bladder or prostate; the liver, spleen, and kidneys were in a state of lardaceous degeneration.

Case 2.—A gentleman, about forty-five years of age, and who, with the exception of dyspepsia, had always enjoyed good health, was living at the seaside in the early spring, when the temperature so frequently undergoes rapid changes in the course of a few hours. One morning, finding the weather warm, he neglected to put on his overcoat, and as he was driving in an open carriage he felt the wind extremely cold around his loins. On his return home he experienced a slight rigor, and complained of pain in the back. The pain gradually increased, and was attended by considerable fever. As the pain became very constant and severe, his medical attendant began to suspect it was not an ordinary case of lumbago, as had been at first supposed, and recommended that he should be removed to London.

When I saw him he was suffering from constant pain, chiefly referred to the right side of the loins, but radiating over the whole abdomen; it was greatly aggravated at different times of the day, and sometimes became so agonising that the patient was unable to restrain his cries. There was intense tenderness of the right side of the back, and any attempt at moving him so increased his sufferings that we were unable to obtain a satisfactory examination of the part of which he complained. The urine was normal, the pulse rapid, and the temperature elevated.

It appeared, on inquiry, that he had been subjected to long-continued anxiety and mental distress, that for many months he had resided in the South of France, and had had a carbuncle on the neck a few months before his illness. He had never experienced any affection of the urinary organs.

The pain continued very acute until about the third week of the illness, when the paroxysms became less frequent and his sufferings less severe. The subsidence of the pain seemed to confirm the view expressed by one of the physicians who had been consulted, that the case was one of neuralgia arising from malaria, to which his residence abroad might have rendered him liable. After a few days, however, a swelling was observed in the right loin, which rapidly increased in size, and in which fluctuation was shortly afterwards detected. The tumour was punctured by the aspirator, a quantity of pus was removed, and the patient rapidly and completely recovered.

You will remark that although both of the above cases were connected with inflammation of the connective tissue surrounding the right kidney, they presented many striking differences. Thus, in the first there was no apparent cause for the disorder, its progress was very slow, and it was many months before suppuration was established; in the

second the onset was sudden, followed immediately on exposure to cold, and an abscess appeared in the loin in a few weeks. In the former the amount of pain and of fever was moderate, and at one time the patient so much improved as to have gained eighteen pounds in weight; in the latter the pain was excruciating, and the fever persistently high. As to the physical signs, a tumour could be felt in the renal region in the first case at an early period, and it remained for many months without apparent alteration; in the second there was no local swelling to be discovered until a tumour presented itself rather suddenly in the back.

When, however, we examine the subject of perinephritic abscess more carefully, we shall find that both of these are examples of a class of cases in which the disease originates independently of an affection of the neighbouring parts, and that others occur, differing from them in their course, symptoms, and physical signs, in which the inflammation of the connective tissue is the result of a morbid condition of the kidney, or organs situated near it.

I have told you that perinephritic abscess is a rare disease, but it is impossible to give any accurate idea as to its frequency, for although cases are every year recorded in our hospital registers of abscess in the loins, most of them recover, and there is therefore no certainty that the mischief originated in the connective tissue around the kidneys.

On examining the post-mortem records, I find that between the years 1839 and 1883 only seventeen cases are recorded, but there can be no doubt that many have been omitted, as they are much more frequent in the later than in the earlier books. It is curious, as an illustration of the fact that rare cases often present themselves about the same time in hospital practice; that in one month in 1875 there were four post-mortems on subjects who had died of this disease.

I have collected 107 cases recorded by various authors, in the hope that by examining so large a number we shall be able to obtain a clearer view of the causes, course, and

symptoms of this malady than if we were to trust to the few cases that have fallen under my own observation.*

Let us first look at the morbid conditions that are most generally found in cases of death from perinephritic abscess. We are told by authors that all cases may be divided into such as are secondary to disease of some of the neighbouring organs, and those in which the inflammation results from causes acting from without—such as injuries, the application of cold, &c.; but on examination we shall discover that it may also arise from causes affecting the general health.

In three of the seventeen cases in our post-mortem records pyæmia is mentioned, and in two of them the abscess around the kidney seemed to have resulted from it. The following case appears to have been of this nature.

Case 3.—A girl, previously in good health, received an injury to the leg which produced suppuration in the tibia, from which she died in a fortnight. On post-mortem examination the veins of the leg were found to be plugged, the plug extending into the vena cava, whilst a large abscess surrounded the kidney of the same side, the capsule being coated with pus and the body of the organ riddled with small collections of pus; there was no other disease, either of the urinary organs or of the other viscera.

When we consider how constantly abscesses are met with in the kidneys and in other organs in pyæmia, it seemed surprising that the connective tissue in this part is not more frequently involved. Cases are also recorded where perinephritic abscess followed typhoid, smallpox, and other fevers, so that its occasional dependence on a general febrile condition must be looked upon as certain. There is another cause of a similar nature to which but little attention has been given, which may tend to account for many of the cases recorded, in which there appeared to be no apparent reason for the malady. You will remark

* It would not have been difficult to collect a still larger number, for Nieden ('Deutsches Archiv für Klinische Medicin,' 1878) has tabulated 166, but after consulting many of the original papers I am inclined to reject some of those he has accepted as being only cases of lumbar abscess of doubtful origin.

in our second case that the patient, although apparently in perfect health, had not long before suffered from carbuncle; and in other instances, some ailment, such as a whitlow or other slight disorder, connected with the formation of pus, is incidentally mentioned as having preceded the abscess round the kidney. Now, it is difficult to explain what connection may exist between the trifling and the more serious malady, but in all probability they both point to a morbid state of the system, in which any trifling local irritation is sufficient to provoke suppuration.

It will be obvious that, as the fatty envelope of the kidney is in immediate relation with the colon and the bones of the spine and ribs, as well as with the organ it surrounds, suppuration in it may be the result of an irritation of any of these neighbouring parts.

The most common cause is an affection of the kidney; thus, of seventeen cases in our records the kidney presented evidence of disease in eight, and in six it was undoubtedly the cause of the abscess formed around it. Out of 107 collected cases thirty-two presented disease of the kidney, and of twenty in which the details of the post-mortem appearances are sufficiently minute to allow a conclusion to be drawn, there are ten in which the kidney is said to have been dilated and filled with pus, whilst seven are described as "scrofulous," and three as "abscess of the kidney." The occurrence of perinephritic abscess under such conditions is generally attributed to perforation of the capsule and the escape of urine or pus into the connective tissue, but in only three the capsule is said to have been perforated, whilst in others the exterior of the organ is recorded to have been covered with a layer of pus. It is most probable, therefore, that the idea of the capsule being generally perforated is incorrect, but that suppurative inflammation spreads from the interior to the external part of the cortical portion, and thus lights up a similar action in the tissue in contact with it.

Most of the cases of dilated kidney resulted from the irritation of calculi, for in eight instances the calculi were

discovered after death, or had been previously removed by operation. It is curious that dilatation of the right kidney should be more prone to set up suppuration around it than the left, for out of thirteen cases eight were of the former and only five of the latter, whilst as regards "scrofulous kidney" the numbers were equal on either side. I am not aware of any anatomical difference between the kidneys by which the fact can be explained, but we shall afterwards see that the right side is also more liable to perinephritic abscess in cases originating from other causes than the left.

A few cases are mentioned in which hydatids were discharged from lumbar abscesses, but the occurrence is so rare, and it would be so difficult to diagnose this condition during life, that we need not do more than merely allude to it.

One case in our records was the result of a severe injury to the kidney, and considering how frequently this organ is lacerated by accident, it is strange that perinephritic abscess is not more frequently observed from this cause. In all probability this arises from the fact that most of those in whom an injury is received in this region are so severely hurt in other respects that death takes place before suppuration can be set up.

A case is recorded by Trousseau in which it was believed perinephritic abscess had been produced by ulceration of the gall-bladder excited by the irritation of a gall-stone, but as the patient recovered there was no proof that such an occurrence had really taken place. In one of our cases the gall-bladder is mentioned as greatly distended in consequence of the impaction of a calculus at its neck, but the perinephritic abscess seemed to have been the result of a coexisting disease of the kidney.

We should naturally expect that perforation of the colon would be a frequent cause of the disease we are considering on account of its proximity to the kidney, but there is no example of this in our records, and of 107 cases I have collected there are only four in which this appears

to have taken place, and in two of them perforation of the appendix vermiformis had given rise to an abscess which had extended upwards into the renal region.

Next to affections of the kidneys diseases of the pelvic organs rank as the most common causes of perinephritic abscess, and of course this is most often the case in the female. Four out of seventeen cases in our records were of this nature; in one, recorded in 1840, an ovarian cyst had opened into the colon, and had also set up a huge abscess which extended from behind the left kidney to the iliac fossa. More generally, however, the abscess originates in the connective tissue of the pelvis and extends upwards; in three out of the one hundred and seven cases it commenced in the broad ligament, in two in an abscess of the ovary, in one there was cancer of the pelvis, in one it followed removal of the testis, and three others occurred after operations on the bladder or urethra. There may be considerable doubt whether in the last-mentioned cases the mischief may not have been pyæmic, but in most of those of pelvic origin the pus seems to find its way upwards in the connective tissue.

The kidneys are so walled in and defended by bones, and these are so liable to disease, that you would expect that perinephritic abscess would often originate in their morbid conditions, but it must be borne in mind that abscesses resulting from affections of the vertebræ are usually conducted downwards by the psoas muscles, whilst those produced by caries of the transverse processes and ribs tend to open externally and without implicating the deeper structures. I have only found four cases out of 107 in which the disease we are now considering could be fairly ascribed to an affection of the vertebræ, but there were many in which the bones seemed to have become diseased by the suppuration set up in their neighbourhood.

Such are the usual morbid conditions that are discovered in fatal cases of perinephritic abscess, but there are some which must be regarded as the results of the collection of pus pent up in such a circumscribed position. The

most frequent of these is an affection of the lumbar muscles in the neighbourhood of the abscess, the tissues becoming œdematous and softened, and thus favouring the progress of the matter to the surface of the body.

In some instances the diaphragm undergoes a similar change, and perforation takes place, setting up empyema, although in other cases this arises from absorption, or, as some contend, from the passage of the pus through the pillars of the muscle. The frequency with which the lungs and pleuræ become affected should always be borne in mind. Out of seventeen cases in our records, one case presented pneumonia and pleurisy, two pneumonia alone, two empyema alone, and in two others evidences of phthisis were discovered. The state of the thoracic organs is not mentioned in the other cases, but as in some of them the kidneys are said to have been the seat of scrofulous deposit, it is not unlikely that tubercular disease co-existed in the lungs or serous membranes.

In some cases suppuration of the psoas was present; in fact, this would appear to be a not unfrequent accompaniment of the disease, for out of our seventeen cases two are stated to have presented an abscess extending from the renal region to below Poupart's ligament, and in two others abscess in the psoas muscle is especially noted. Perforation of the colon by a perinephritic abscess is usually supposed to be of rare occurrence, but two such cases occurred out of the seventeen, and in one there was also an opening into the duodenum.

You would expect that perforation of the peritoneum would be very apt to take place; but such is not the case, for this occurred in only one of the seventeen cases, and in two others suppurative peritonitis was present, although no opening from the abscess into the serous sac could be discovered.

In Case 1 there was no disease of the kidney, but extensive fibroid thickening was discovered after death around the bones of the vertebræ, and a very similar instance is recorded in our post-mortem registers. Fibroid thicken-

ing is apt to take place in all chronic cases, and affects the walls of the abscess, constituting, no doubt, the chief difficulty to its healing. In Case 1 lardaceous degeneration was present in many of the viscera, showing that the long-continued discharge had interfered with the nutrition of the patient, and had probably been the chief cause of the fatal issue of the malady.

Let us now see if we can throw any light upon the circumstances tending to give rise to the disease; and the first point is to ascertain under what conditions it chiefly takes place.

Of one hundred cases in which the sex is recorded, sixty-one were males and only thirty-nine females; and the greater liability of the former is observable when we group them according to the morbid conditions with which the disease was associated. Thus, when it originated in disease of the kidney, nineteen were males and fourteen females; and the same disproportion is observed when the abscess was the result of pyæmia, diseased colon, or affection of the bones, the only exception being in the case of pelvic disease, where, as might have been anticipated, the number of females was greater, being in the proportion of five to one.

As regards age, the following table shows the number at each decennial periods out of seventy-six cases:

Under 10 years of age	...	...	...	...	4
10 to 20 „	...	...	...	...	9
20 „ 30 „	...	...	...	...	20
30 „ 40 „	...	...	...	...	21
40 „ 50 „	...	...	...	...	12
50 „ 60 „	...	...	...	...	6
60 „ 70 „	...	...	...	...	4
					76

It will be remarked that, although perinephritic abscess may occur at any age, it is most common between twenty and forty, more than one half of the whole number having been affected during this period. The earliest age I have

found was that of a child only fourteen months old, recorded in our post-mortem registers: and in none of those I have been able to collect has the age exceeded seventy. Dr. Gibney has quoted some cases of lumbar abscess in children, but I have not included them in the above list, as from the absence of post-mortem examinations there was no proof that the pus was situated in the perinephritic tissue.

The right side is more frequently the seat of a perinephritic abscess than the left, for out of ninety-two cases fifty-four were on the right and only thirty-eight on the left. This has been supposed by some authors to arise from the greater liability of the right side to strains and injuries; but this can scarcely be the cause, as the disproportion is greater on the part of the females than on that of the males; in the former it amounted to 70 per cent., and in the latter only to 55 per cent.

Blows and falls upon the loins have long been recognised as a common cause of these abscesses. In one case in our records the right kidney had been torn in its lower third, and was stained with blood, the upper two thirds were studded with pus, and the whole organ was in a state of suppuration. Accidents of this kind sometimes lead to the formation of a tumour in the renal region, which, however, does not necessarily end in suppuration, One of the best instances of this that has come under my notice is the following:

Case 4.—An artillery officer was superintending the removal of a piece of artillery, when the rope suddenly broke and struck him a severe blow on the left side of the loins. When carried to his quarters he passed a quantity of blood in his urine; subsequently he is said to have passed pus, and the left testis became very painful two weeks afterwards.

He was brought to me two months after the accident. He was then pale and feeble, but there was no blood or albumen in the urine; he had no rigors or sweatings, and there was no swelling in the lumbar region posteriorly. On pressing the hand deeply into the left side of the abdomen a large tumour could be plainly felt, which was somewhat tender on pressure, and was immovable either with respiration or by the hand.

Six months after the accident I again examined him and found the tumour smaller and less distinctly defined.

Two years afterwards it had completely disappeared, and he was restored to his former health. Although this case terminated fortunately, we can readily imagine that if any urine had escaped through the torn structures of the kidney into the tissue around it, suppuration would have been set up, and the effused blood would have been evacuated along with it.

The application of cold, especially when the body is heated, is another circumstance to which many of these cases have been referred. We ought, however, to receive the accounts on this point with a certain amount of distrust, as patients are generally apt to attribute their ailments to cold whenever there is no other apparent cause. In Case 2 the history of exposure to cold was so definite that we could fairly refer the production of the abscess to it; and in Case 5 the symptoms immediately followed a chilled condition of the skin, and the patient ascribed his illness to it.

Case 5.—A gentleman, about fifty years of age, who had often suffered from rheumatic attacks after exposure to cold, attended an evening party on a Christmas night. The weather was very cold, and he inadvertently dressed himself in clothes very much thinner than he was in the habit of wearing. On returning home he complained of feeling very chilly, and the following day he experienced pains round the abdomen.

When I saw him a day or two afterwards, I found the whole abdomen very tender, but there was a very slight rise of temperature. The pulse was only a little quickened, and his pains were consequently attributed to rheumatism of the abdominal muscles. In a few days afterwards the pains of the abdomen ceased and were replaced by a fixed pain in the right side of the back towards the lower part. His sufferings gradually increased, and he would not permit a proper examination on account of the great tenderness of the part.

For some weeks these symptoms continued unabated, when a swelling showed itself in the right lumbar region, in which, however, fluctuation could not be detected, sweatings came on, he lost flesh rapidly, and a hectic flush appeared on the cheek.

We were waiting for evidence of the formation of pus in order that an opening might be made, when he was one day attacked with severe rigors, the pulse became rapid, the tongue brown, and, on examining the tumour, it was found to be much flatter than before, the whole surface had become of a dark colour and was emphysematous. Free incisions

were made into the part, but gangrene showed itself, and he sank in a few days. No post-mortem could be obtained.

In a considerable number of cases of perinephritic abscess, as in Case 1, the symptoms come on suddenly and without any cause to which they can be assigned, and as there is no evidence of an affection of the kidney we are at a loss to what we should attribute the disorder. Perhaps a searching inquiry might elicit in many instances of this sort that the general health had become deteriorated, and had evinced itself by the occurrence of boils, whitlows, or some other form of local suppuration.

In the majority of the cases I have collected, the disease was ushered in with pain of the loins; in some it was from the first referred to the part at which the abscess was afterwards observed; in others there was only a general aching across the back, which subsequently became fixed in one side. Out of seventy-seven cases in which the history is sufficiently recorded to enable us to ascertain the mode of invasion, pain was the prominent initial symptom in fifty. When the abscess resulted from a previous disease of the kidney, pain ushered in the disease in twenty out of twenty-four; but when it occurred from other causes, or appeared to arise without any apparent reason to which it could be fairly assigned, only twenty-eight out of fifty referred to it as the first symptom which attracted their attention. This might have been anticipated from the morbid conditions found in these cases after death, for where inflammation has arisen from a scrofulous kidney, or from a kidney filled with pus, the perinephritic inflammation, being suddenly excited by the contact of an irritating fluid, would naturally first evince itself by pain in the part affected.

In another group of cases severe rigors ushered in the malady, but this was chiefly in "primary" cases; of these, ten out of fifty showed this method of invasion, whilst only three out of twenty-four kidney cases presented shivering as the earliest symptom. Altogether, either rigors or other symptoms of fever preceded pain in the loins in twenty-five out of seventy-seven cases. Are we now to look upon the

rigors as always the result of the irritation set up in the neighbourhood of the kidney, or may not the perinephritic inflammation be sometimes the result of a general disorder of the system? I think the latter is the case in many instances, and that local conditions, the exact nature of which we do not comprehend, probably determine the seat of the morbid condition resulting from it. In one person exposure to cold is followed by pneumonia, in another by erysipelas, in another by suppuration in the loins; but the rigors, so often ushering in each form of disease, appear to indicate the general, not the local, injury inflicted on the system. This seems to be borne out by the fact that fever without marked shiverings is more frequently an initial symptom, and precedes pain in the loins, in the primary than in the kidney cases, for in the former seven out of fifty, in the latter only two out of twenty-four, are recorded as having commenced in this way.

Seven cases out of seventy-seven are recorded as having exhibited symptoms connected with the urinary organs as the first indication of the disease; of these, three occurred in kidney cases and were the result of long-standing renal mischief, whilst four were in persons previously healthy, in all of whom blood was present in the urine and resulted from injuries inflicted upon the kidneys.

We have seen how the cases differ in their earliest stage—that some begin with pain alone, whilst others commence with fever preceding any local indication of mischief. We must now inquire as to the course and progress of the malady.

In regard to the symptoms we shall have to recognise three classes.

In the first there are no symptoms or physical signs pointing to suppuration near the kidneys, or they are masked by more prominent manifestations of illness, and the physician is surprised to find after death a huge abscess of the existence of which he had no suspicion. Such instances occur occasionally in pyæmia or after fevers, the suppuration in the loins being only the result of the general

infection of the whole system, and the vital powers of the patient being too much depressed to permit of the manifestations of the symptoms that usually indicate the local complication.

In the second class, as in Case 2, the symptoms come on suddenly, the fever is high, the pain excruciating, the course of the disease rapid, and suppuration is quickly established. In the third class, as in our first case, the time of the onset is more difficult to determine, the progress is slow, the fever moderate, the pain often comparatively slight, suppuration takes place very gradually, and the case may drag on for a long period. The acute form is much more common than the chronic, and the description of the disease by authors seems to have been mostly drawn from it.

I should have wished to have been able to group the cases I have collected under the three heads of latent, acute, and chronic perinephritic abscess, for the purpose of analysis, but, unfortunately, the duration of each case is rarely given with sufficient exactness to enable this to be satisfactorily attempted, so that I have been obliged to arrange them according to the condition of the patient before the commencement of the disease, and have included under the head of "primary perinephritic abscess" all those previously healthy, whilst those who were affected with kidney disease or other visceral maladies capable of setting up the abscess I have arranged under the head of "secondary perinephritic abscess."

Let us, then, examine the chief symptoms that have been present during the course of the illness. The pain which ushered in the disease was seldom at first very severe; it was ordinarily of a dull heavy character, and in some instances is described as a sensation of heaviness rather than of pain; but, as a rule, it rapidly increased in severity, becoming sharper and more lancinating as the formation of pus progressed, until in many it became so agonising that the patient was unable to restrain his cries or groans. This has been, in some instances that have fallen under my own observation, so striking that I have been

inclined to think the person was exaggerating his sufferings, more especially when no swelling was present to point out with certainty the cause of his extreme distress. I have seen the pain come on at intervals with great severity, a dull continuous uneasiness being alone complained of in the intervals, and I have known this paroxysmal character delude physicians of great experience into the belief that it was only neuralgia from which the patient was suffering. The pain is generally increased by all motions of the body, even by coughing, so that the recumbent position is preferred, and the unaffected side is chosen in order that the lumbar muscles may be as much as possible maintained at rest. In some instances the pain is stated to have been increased whenever the bowels were moved; but whether this arose from the abdominal muscles being called into play, or from irritation of the colon, cannot be determined from the instances recorded. As the disease progresses, the pain is seldom limited to the lumbar region, but shoots across the abdomen, or radiates downwards to the iliac fossa, the back of the hip, or even down the thigh.

In almost every instance the loin is tender upon pressure, even at an early period, and, as the formation of pus proceeds, this often increases to such a degree that the patient refuses any examination, lest the movement of his body or the pressure of the fingers of the physician should bring on a paroxysm of pain.

The amount of fever varies greatly in different cases, but it almost always increases as soon as a swelling appears on the loins, and is then associated with rigors and severe sweatings. It was, as a general rule, a more prominent symptom in the "primary cases," it being recorded as severe in 32 per cent. of these, and accompanied by repeated rigors in 14 per cent.; whilst fever was marked as a prominent symptom in only 12 per cent., and associated with frequent rigors in only 9 per cent. in the "secondary" class. In three instances the attacks of fever were distinctly intermitting from the first, and their periodic cha-

racter was so strongly marked that the disease was looked upon as ague. These were all cases of "primary abscess," and were of course more likely to mislead the physician from the urine presenting no abnormal character. I have seen two cases in which there was a marked cessation of pain and subsidence of fever a few days before the swelling of the loins appeared, and I suspect this must have arisen from the softened condition of the muscles producing a diminution in the tension of the inflamed parts.

Constipation was often remarked in the cases I have collected, and in one instance it was suggested by Dr. Moxon that it might be the result of the pressure of the abscess upon the sympathetic nerves. I scarcely think it is necessary to seek for an explanation of it in nervous derangement, for, as has been before mentioned, any effort at relieving the bowels is in many cases attended with a great aggravation of the pain, and consequently the patient is apt to allow an accumulation to take place, and in addition to this, as we have before seen, the coats of the colon are liable to be softened from the pressure of the pus surrounding it. Diarrhœa was recorded in a few instances, but I have only found it noticed where disease of the kidney was present, and as it usually showed itself towards the termination of the case, it was not unlikely of pyæmic or uræmic origin.

Vomiting occasionally occurred, but it was also more common in "secondary" than "primary" cases, so that it may be also referable to the co-existing affection of the urinary organs. The appetite generally seems to fail at an early period, even when the fever is not high and the pain not excessive ; and loss of flesh proceeds rapidly, but is most marked in the acute cases. You will, however, observe in our first case that the patient gained flesh to a considerable extent, although resolution of the inflammation had not taken place.

The abscess generally forms a tumour in the lumbar region, but occasionally it bursts into one of the neighbouring organs; this usually occurs into the pleura, although

occasionally the rupture takes place into the lung. I find eight cases out of fifty in which a chest complication was noticed. In most of these the patient was suddenly attacked with dyspnœa, often without any marked increase of pain or fever; whilst in others the expectoration of a large quantity of pus was the first indication that perforation of the diaphragm had been produced. Such cases do not necessarily end fatally; most of them seem to have experienced relief from the discharge of the pus through the bronchial tubes. It is most important always to bear in mind this termination of peninephritic abscess, as in some instances the previous abdominal symptoms have been overlooked, and the dyspnœa, cough, and purulent expectoration have led to the supposition that the patient was suffering from tubercular phthisis.

Pneumonia was recorded in four cases out of fifty, and was probably in some of pyæmic origin, although instances are mentioned in which the patients recovered from it as well as from the original malady.

In two cases slight jaundice presented itself, probably from the pressure of the abscess, but it was of rare occurrence, and did not appear to have modified the ordinary cause of the disease.

The physical signs are of great importance; indeed, although we may often guess at the presence of the malady, we can seldom diagnose it if they are absent. At an early stage there is usually a dull note on percussion over the loin, and this becomes more marked as the disease progresses. A swelling in the loin was recorded in sixty-five out of seventy-four cases. In a few instances it was present when the patient was first seen by the physician, and the previous pain and fever had no doubt been very slight or had been overlooked. In the majority a tumour was not perceived until the inflammation had made considerable progress, and then the depression of the loin between the lower ribs and the crest of the ileum was seen to be filled up with a general swelling, the skin presenting its normal appearance. In most cases, as time goes on

the tumour increases in size, extending to the side of the abdomen, œdema of the integuments takes place from the pressure of the subjacent abscess, the skin becomes red, and finally, unless the pus is discharged into one of the neighbouring organs or is opened by the knife, fluctuation can be perceived.

Fluctuation can in some cases be best discovered by placing one hand in front and the other on the loin whilst the patient rests on his hands and knees.

The presence of the lumbar tumour was equally common in the "primary" and in the "secondary" cases, for it was recorded in each as present in 88 per cent. In some chronic cases, as in Case 1, a tumour can be discovered in the region of the kidney long before the appearance of a lumbar swelling. It then lies deeply, and is covered by the colon, so that the percussion note in front of it is tympanitic, and it is immovable either by the respiration of the patient or by the manipulation of the physician. Even in some acute cases the swelling might perhaps be detected in the abdomen at an early period, were it not for the tense condition of the abdominal muscles and the extreme tenderness that renders the patient unable to endure the requisite examination.

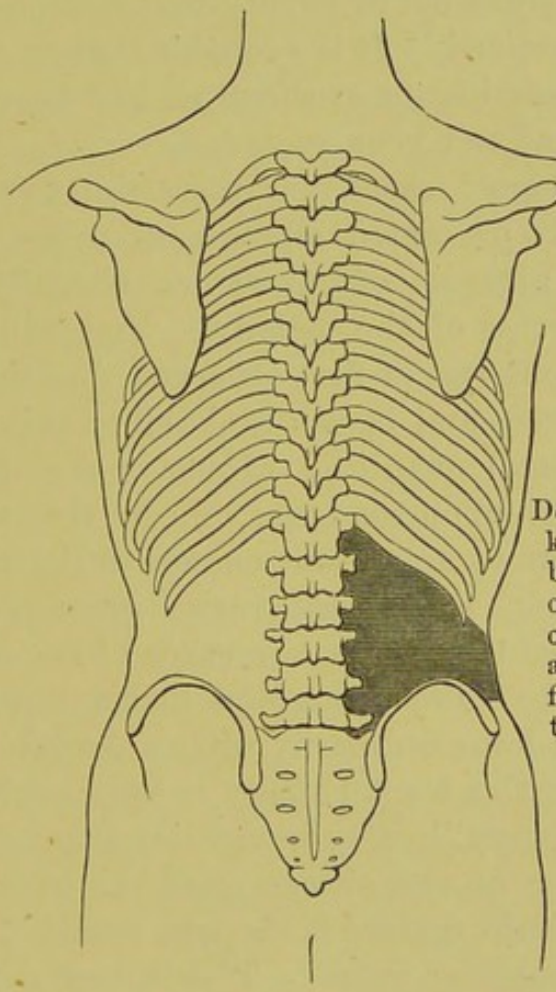
In a small number the swelling presents itself in some other situation, especially in the iliac fossa or below Poupart's ligament. This is most common when the perinephritic abscess has resulted from pelvic inflammation, or from suppuration originating in perforation of the appendix vermiformis. Under such circumstances, although pus may be found around the kidney, there may not have been sufficient tension to set up the changes that lead to the formation of a tumour in the loins (see Fig. 5).

When the pus finds its way into the pleura or the colon, or, as is more rarely the case, into the peritoneum, the tumour of the loins, if one has been formed, becomes suddenly soft and flaccid; but it is rare for emphysema of the skin to occur, as in Case 5.

Considerable importance has been assigned by some

authors to the position of the limb of the affected side, and it has been described as an important symptom of deep-seated abscess. Thus in Case 1 the thigh was at one time flexed on the pelvis, but the patient was subsequently able to walk about the ward upright. In five of the collected cases the patient was described as walking lame, with the

FIG. 5.—Diagram of physical signs in perinephritic abscess.



heel drawn up and the toes just touching the ground, even at an early period of the disease; and the thigh is stated to have been flexed on the pelvis during the progress of the disease in ten. Three of these died, and in all either suppuration or inflammation of the psoas muscles was found on post-mortem examination, so that we may conclude the symptom in question arises from such a

condition. It is noticed in some cases that the patient when sitting rested on the ischium of the opposite side, but this would be the most natural position for anyone to use who was suffering from severe pain in one loin.

When the abscess is the result of a previous disease of the kidney, we should expect to find some indication of it in the urine. It is recorded that in two cases the urine was only albuminous, in two there was more or less hæmaturia, whilst in eight out of twenty-four a deposit of pus in the urine was noticed. It is probable that in the remaining cases the examination of the urine had been neglected or the results had not been recorded.

In the "primary" cases it is interesting to remark that none persistently presented albuminous urine, but in five out of fifty the presence of pus was occasionally remarked during the progress of the malady. You will remember that in Case 1 pus was at first observed, but that it afterwards disappeared, and in all probability this occasional occurrence of small quantities of pus in the urine points rather to pressure upon the renal vein by the surrounding inflammation than to an organic change in the organ itself.

The duration of the disease varies greatly, as will be seen by reference to the first two cases I have selected for our consideration. Trousseau says that a tumour begins to appear in the loins ordinarily after a period of eight to fifteen days, but this must be only in very acute cases.

In most "primary" cases immediate improvement follows the opening of the abscess, and the wound readily heals; but where the disease is chronic, fistulæ may remain unhealed for months or years. This is more especially so when the perinephritic inflammation has resulted from the irritation set up by calculi in the kidney.

The diagnosis is often extremely difficult in the early stages; indeed, in many instances you can only suspect that inflammation is going on around the kidney, as you have not sufficient evidence to prove it.

Before a tumour has presented itself you are most liable to confound the disease with various fevers in their early

stages, with lumbago and neuralgia, and with nephritic colic. The chief points you have to bear in mind at this period are that perinephritic abscess is extremely rare; that it is attended with fever, and usually with tenderness of the affected part; that it is most apt to occur in persons who have suffered from renal calculi, pyelitis, or scrofulous kidney, after operations on the bladder or urethra, or where the patient has been subject to injuries or strains of the loins, or to exposure to cold or wet when he was in a heated condition.

In small-pox and other eruptive fevers there is often excessive pain of the back, attended with an elevated temperature; but the pain of the loins is more general than in perinephritic abscess; there is no marked tenderness, and in a few days the appearance of the eruption will put an end to all doubt.

It differs from lumbago in the pain being limited to one side, in being more continuous and less dependent on movement, in the presence of high fever and quickness of pulse, and in its being often ushered in by well-marked rigors.

When the pain comes on suddenly and is severe, it may simulate nephritic colic, but the presence of high fever, the absence of retraction of the testis, irritability of the bladder, and of albumen, pus, or blood in the urine, are well-marked points of difference. You will naturally object that the urine may present all these morbid conditions where the kidney has been previously diseased; but you must remember that the onset of "secondary" cases is usually slower and the pain less severe than in "primary" cases.

It is of great importance that you should be able to ascertain the presence of a tumour as early as possible, and in Case 1 you will observe it was perceptible in the abdomen long before any appearance of lumbar swelling. The chief difficulty, as I said before, arises from the tension of the abdominal muscles, and the great tenderness that prevents a complete examination. It is recommended that under such circumstances the patient should be examined

under chloroform, and there is no doubt that in any difficult case this procedure should be employed.

As regards the tumour, you are not likely to confound it with enlargement of the liver or spleen, or with an aneurysm. Its fixed and deep position behind the colon, its immobility on respiration or pressure, and the absence of pulsation will distinguish it, when, as in Case 1, it is felt in the abdomen; whilst the diffused lumbar swelling, gradually increasing and eventually producing œdema and redness of the skin, points out that a deep abscess is coming to the surface.

We are told that perinephritic abscess may be confounded with cancer of the kidney; but the severe and frequent hæmaturia, the absence of fever, the marked anæmia, and the implication of other organs, so characteristic of that disease, will save you from mistake.

You are more likely to mistake a dilated kidney when it forms a well-marked tumour in the abdomen for an abscess behind a kidney already in a diseased condition; for in both you have a tumour, fever, loss of flesh, sweatings, and perhaps rigors. In dilated kidney, however, the tumour is more defined and smooth, there is no diffused swelling of the loins and no œdema, and there is rarely the severe pain or the rapid course of perinephritic abscess.

You may confound it, again, with disease of the vertebræ, especially when the latter is associated with abscess pointing in the back; but in spinal disease you generally find tenderness or projection of the bones, preceded for some time by pain in the back and general ill-health; the fever is less severe, the progress slower, and the abscess is of much smaller dimensions. Still, you must bear in mind that disease of the transverse processes of the vertebræ is in some cases the exciting cause of abscess round the kidney.

The treatment of perinephritic inflammation must be obviously very different before and after the formation of an abscess. So long as fever and pain of the loins are the only symptoms, it should be your endeavour to prevent the

formation of pus, and you will naturally inquire whether there is any chance of this desirable object being attained. I think this may be answered in the affirmative, for in Case 3, although the kidney had been severely injured and remained for a considerable period enveloped in blood or exudation, the patient recovered without any abscess being produced. Some authors have recorded cases in which the symptoms were present that ordinarily accompany the early stages of perinephritic abscess, and yet no suppuration followed them; but these were all "primary" cases, and I am not aware of any which had this fortunate termination where there had been previously well-marked signs of scrofulous kidney or pyelitis.

In the early stage the most important remedy you can employ is perfect rest in the recumbent position. By this you not only lessen vascular congestion, but you prevent the irritation likely to be set up by the movements of the lumbar muscles. The bowels are almost always constipated, and any acumulation in the colon is apt to produce mischief. You are therefore advised to prescribe aperients, and the most useful drugs of this class are salines, which should be given in sufficient doses.

In case of the pain being very severe you would of course have recourse to opium, the subcutaneous injection of morphia generally giving most relief.

As regards local treatment, leeches may be used, due consideration being taken of the state of the patient's strength. Cold applications to the loins, such as the use of ice and evaporating lotions, are recommended by many authors, and will no doubt be useful in primary cases, but I think hot fomentations and poultices are more apt to give relief where the inflammation has resulted from chronic disease of the kidneys.

All writers on this complaint are agreed that is necessary to open the abscess as soon as you have good evidence that pus is really formed. This is not only to obviate the ill-effects of the absorption of the pus and to lessen the duration of the disease, but also to prevent the bursting of the

abscess into the pleura, or its burrowing downward into the iliac fossa, or finding its way along the psoas muscle into the groin.

Different methods of operating have been employed. The older surgeons used caustic, whilst modern practitioners trust to the knife or trocar. Caustic was formerly used from a dread of hæmorrhage, but it is now generally abandoned, and the surgeon must of course use his own judgment as to the other methods of procedure. The aspirator seems to me to be most likely to be useful where the abscess is tolerably superficial, and where the course of the disease has been rapid; but a free incision would appear more likely to be beneficial in chronic cases, and when disease of the kidney is suspected of having given rise to the mischief.

The results of an early opening of the abscess in "primary" cases are most encouraging, for out of the cases I have collected only five deaths took place out of thirty-five; of thirteen females none died, whilst five out of twenty-two succumbed amongst the males. It was less successful in "secondary" cases, ten having died out of twenty; those that recovered had either suffered from affections of the bladder, or from the irritation set up by calculi, and none of the successful cases had presented symptoms of scrofulous kidney or suppurative pyelitis. Four cases in which the abscess had originated from pelvic disease or affections of the colon were operated upon, and two died; one case was affected with pyæmia, and the issue of this was also fatal. The operations were about equally successful, whichever side was affected; three having died out of eighteen when the right, and two out of ten when the left, was the seat of the suppuration.

LECTURE VI.

ON GASTRIC AND PERIGASTRIC ABSCESSES.

Gentlemen,—We have hitherto been considering abscesses communicating with the intestinal canal, but in order to complete our survey of the whole subject of abscesses opening into the digestive tube, we must now turn our attention to those connected with the stomach. It will, however, in order to gain a clear idea of these affections, be necessary for us to consider separately gastric and perigastric abscesses.

Gastric abscesses are situated in the walls of the organ, and may or may not open into it; perigastric abscesses are in the neighbourhood of the viscus, and communicate with it by an opening through its coats, or are the result of ulcerations in its interior. Gastric abscesses may present themselves either as a purulent infiltration of or as a localised collection of pus in the coats of the stomach; they have been occasionally observed as an accompaniment of acute infectious disorders, more especially in puerperal cases, and under such circumstances they probably result from the absorption of pus. Perigastric abscesses are also very rare, but as some instances have fallen under my own observation, it is probable they are not so uncommon as is generally represented.

In the gastric abscesses I have seen there has been always thickening of the walls of the stomach, either by malignant disease or as the result of previous inflammation; the pus has been situated in or near the newly-formed structure, and the mucous membrane has presented

numerous small openings through which the pus could be readily squeezed. We occasionally meet with patients who assure us that they have been suddenly relieved of epigastric pain by the vomiting of pus, but considering how easily mistakes may be made between pus and other secretions, we are not justified in accepting such statements as evidence of a gastric abscess.

Leube, after an examination of the various recorded cases of gastric abscess, has laid down the following as the symptoms of the disease :—"In the midst of perfect health, or after a period of general malaise, the individual is seized with pain in the stomach and vomiting, accompanied by thirst, dry tongue, small, frequent, and irregular pulse, meteorism, and diarrhœa; subsequently delirium and prostration ensue, and finally death."* Now, unfortunately, in the cases I have seen there were no symptoms pointing to any change in the condition of the patient that would lead us to suspect an abscess of such an important organ. The following is the last case that has fallen under my notice :

Case 1.—A man of middle age was admitted into the hospital with the ordinary symptoms of acute pneumonia. His wife stated that he had been unable to work for the last three years, on account of gradually increasing debility, and that he had daily vomited a quantity of clear fluid, but had not been in the habit of vomiting his food. On post-mortem examination, in addition to the pneumonia, the pylorus was found to be greatly thickened, and the stomach somewhat, although not excessively, dilated. There was a small ulcer, apparently of recent formation, near the pylorus at a part where the coats were extremely thin and wasted, the rest of the mucous membrane in that region having a tough, fibrous appearance. In the thickened pylorus there was a collection of pus which could be easily squeezed through numerous minute holes with which the mucous membrane was perforated.

Now, in this case there was no complaint on the part of the patient of any pain in the epigastrium, and it was only after his death that we were informed of his previous impaired health. In the other cases I have seen there has been a similar absence of well-marked signs of suppu-

* 'Ziemssen's Cyclopædia of the Practice of Medicine,' vol. vii, p. 161.

ration, and we may, I think, seek for an explanation of this in the rapidity with which the pus makes its way through the numerous small openings that form in such cases in the mucous membrane of the stomach.

Abscesses occur in the left hypochondrium and epigastrium independently of any irritation in the stomach, or of a communication with that organ. Thus you will occasionally see them arising from a suppurating hydatid cyst, more rarely as the result of tubercular peritonitis, or from irritation set up in the liver, spleen, or kidneys. But the form of perigastric abscess to which I propose to limit my remarks is that which either commences in the stomach, or which afterwards forms a communication with that viscus. The following case, which was admitted under my care, will show how obscure the affection frequently is, and how very difficult it may be to recognise it:

Case 2.—A man, aged thirty-eight, was admitted January 31st, 1881. He was a weaver, and had enjoyed good health until "some time ago," when he began to suffer from indigestion, the food appearing to lie heavy on his stomach and producing great pain. He stated that he had suffered from an injury to the back, but its nature and the date are not mentioned in the notes, and he evidently did not attach any importance to it. He never had syphilis.

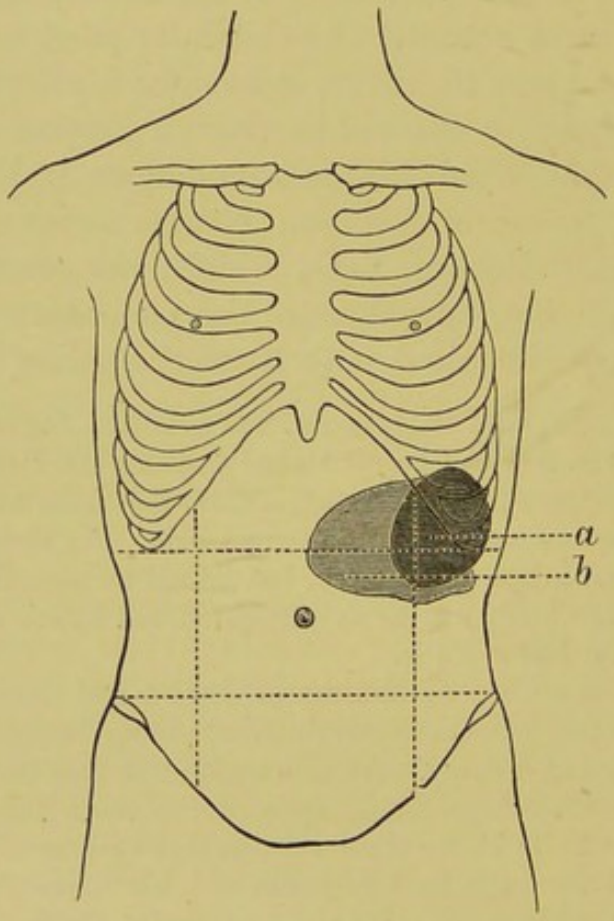
On admission, he had an anxious expression and complained of very severe pain in the left hypochondrium, extending backwards round the left side as far as the spine. All this region was very tender on percussion, the most tender spot being opposite the tenth and eleventh ribs. He was unable to lie on his right side, so that he constantly reclined on the left, with the neck bent forwards and his knees drawn upwards. Pulse 90; temperature 99°. He had no appetite, the tongue was thickly furred, and the bowels obstinately confined. The liver dulness extended from the fifth costal interspace to below the ribs, and it was slightly tender on pressure. Abdomen generally resonant. In the left hypochondrium, dulness on percussion extended upwards to the heart's apex, and downwards to a level with the umbilicus. Chest normal. The heart's apex was not raised, and there were no murmurs.

On February 10th he had constant vomiting, and he complained of the severity of the pain which extended from the left hypochondrium to the spine; the breath was very offensive; he could take no food; the pain was increased directly he attempted to take any food, but it was also continuous, and increased at night, preventing sleep. The recti muscles were hard and rigid. On the left side near the spine there was dulness

on percussion, but no increased pulsation, and no murmur. He had constant nausea, increased even after a drink of water.

Feb. 15th.—A hardness can be felt below the left hypochondrium, and an elongated dull space on percussion in the left hypochondrium, measuring three inches longitudinally by six laterally (see Fig. 6). The lower border of the liver was also remarked scarcely to descend on full inspira-

FIG. 6.—Plan of case of perigastric abscess. *a*. Part dull on percussion. *b*. Part comparatively dull on percussion.



tion ; there was also some dulness on percussion, and increased resistance to pressure immediately above the umbilicus. The man continued in much the same state until April 22nd. The pain was excessive and constant, and required the use of subcutaneous injections of morphia frequently in the day. He had steadily lost flesh, and was then only 6 st. 12 lb., having weighed 8 st. on admission. The temperature varied from 98° to 100° during February, but rose to 102° in March, and afterwards oscillated until April 22nd, at which date it rose to 103°, and the patient complained of great pain at the base of the lungs behind, although neither dulness nor friction-sounds could be discovered.

April 27th.—He had a severe rigor, the temperature rising to 106° ;

but the pain in the left side was not more severe than usual. The left chest was now found to be dull on percussion, with absence of breath-sounds, diminished vocal and tactile fremitus, but no friction-sounds could be heard.

April 29th.—He had severe and general sweatings, the dulness was much increased in the left hypochondrium, but the tenderness was not increased, and the pain had diminished.

Friction-sounds were first discovered on May 2nd near the apex of the heart; rigors recurred from time to time, and a herpetic eruption showed itself on the lips, palate, and roof of the mouth. After this period the appetite began to improve, the pain decreased, and his weight remained stationary.

May 12th.—Friction-sounds could be heard over the whole left hypochondrium, where there was formerly such marked dulness on percussion, the dulness at the back of the lung slowly diminished, and the pain gradually lessened, until it only came on after food.

From this time he rapidly improved, the pain entirely left him, the appetite returned, and he gained (so the notes state) as much as six pounds in weight in a single week.

June 22nd.—He was discharged, after being in the hospital five months, and at that time there was no dulness at the base of the lung and no friction-sounds; there was some fulness under the left hypochondrium, but the part was tympanitic on percussion.

There must, of course, be always a certain amount of doubt about any case in which a post-mortem examination has not confirmed the accuracy of the diagnosis, but by taking into consideration the termination as well as the course of the disease we may in most instances arrive at a correct decision.

In the foregoing case it will be necessary for you to bear in mind that the patient had suffered from symptoms of gastric ulcer for some time before he entered the hospital; that on his admission the pain had become constant, although it was still increased by food; and, in addition to this, that an ill-defined tumour could be distinguished below the ribs, whilst on percussion a dull space was found both before and behind in the region of the stomach. He remained in this state for about three months, having lost a stone in weight, and the pain being so severe that the constant use of hypodermic injections was required to alleviate it. At the end of that time severe rigors ensued,

accompanied by effusion into the left chest, although the pain did not increase, and no friction-sounds were heard until ten days afterwards. After this he gradually improved, gained a stone in weight, and although the pain after food persisted for some time, it eventually disappeared. There was afterwards a friction-sound to be heard in the left hypochondrium, where there had been formerly the dulness on percussion, but this also became gradually inaudible.

Now, the above case was clearly not one of cancer, as was at first suspected, for there was no enlargement of the glands or liver, and the ultimate recovery of the patient negatives such a supposition. Neither was it an abdominal aneurysm, for you will remember it is stated there was neither a murmur nor pulsation, and the favorable issue is sufficient to disprove it. The undefined feeling of the tumour, and the dulness on percussion in front and behind, point to a collection of fluid rather than to a solid tumour, and this might arise either from a hydatid cyst or perigastric abscess. The former would not explain the pain after food, nor its persistence after the convalescence of the patient, whilst the latter seems to meet all the difficulties of the case. We shall afterwards find that this form of abscess chiefly occurs in chronic ulcers of the stomach, where adhesions have been formed, and you will observe that adhesions must have been present, for it is remarked in the notes that the liver did not seem to descend on full inspiration. The dulness, again, was clearly the result of an inflammatory exudation, for a friction-sound could afterwards be heard in the locality where it was formerly detected. Then it is almost certain that perforation of the diaphragm occurred, and the pent-up pus made its way into the pleura, and this is a common accident in perigastric abscess. But in the diagram copied from the notes, you will remark there is a space in front of the dulness that was less dull on percussion, and you might suppose this was distended with gas, as is so common in perigastric abscess ; but if such had been the case

we should have had pneumothorax when the perforation occurred, so that the idea must, I think, be dismissed. You will, however, be able better to appreciate the probabilities of diagnosis being correct if we now discuss in greater detail the subject of perigastric abscess.

Perigastric abscess of the kind to which I have limited our inquiries is a very rare form of disease, for I have only discovered eight instances of it in the post-mortem records of this hospital. In all of these the walls of the abscess were formed by adhesions of the neighbouring viscera; in five ulceration of the stomach and in three a cancerous tumour were present; in one of the latter an opening had taken place through the abdominal walls. I have been able to collect only forty-four other cases from various authors, but I hope these will suffice to enable me to lay before you some of the chief circumstances connected with the disease.

When we were considering the subject of abscesses connected with the duodenum, we found that in a certain proportion their walls were formed of connective tissue; but it is evident that, from the complete investment of the stomach by the peritoneum, such is not likely to be the case with a similar affection of this organ. We consequently find that in the majority of cases the abscess was walled in by adhesions of the liver, spleen, or colon with the stomach, and that the pus was situated in front of this latter organ; in only four the abscess was situated behind it, in two it was placed in the right hypochondrium, and in three the ribs of the left side formed part of its walls.

Of fifty-two cases, nineteen, or more than one third, are stated to have been in contact with the diaphragm, and, as we shall afterwards see, perforation of this muscle is a common consequence of the disease. A foreign author has attempted to explain the frequency of this situation of perigastric abscess on the supposition that the distension of the intestines that always accompanies peritonitis pushes the pus upwards; but I think it is more probable that, as the perforation of the stomach usually occurs in

its smaller curvature, the inflammation must generally commence in this locality, and where this is not the case, the upward movements of the diaphragm must tend to draw the pus upwards, whilst the descent of the muscle is unable to depress it on account of the adhesions that are already present between the contiguous organs. Occasionally the abscess is situated in the lesser omentum, but there are very few cases on record. It is worth while, therefore, to mention the following:

Case 3.—A man, aged forty-seven, was received into the London Hospital, under the care of Dr. Hughlings Jackson,* with a history of having suffered from pain of the abdomen for eight or nine years; he had never had hæmatemesis or vomiting of food. The day previously he was attacked with constipation, for which numerous enemata had been administered without effect. He complained of extreme pain over the abdomen and great dyspnœa, but died four hours after his admission.

Post-mortem examination.—"The mesentery attached to the upper part of the jejunum was covered over with puriform lymph; the upper and transverse parts of the mesocolon were also coated with lymph. On separating the colon an abscess was exposed lying in the cavity of the lesser omentum, bound in by the jejunum and colon and under the liver and back part of the stomach. The left end of the stomach was much thickened, and on opening the organ a large ulcer was found at the œsophageal end, near the lesser curvature and in the posterior wall. It was about an inch and a quarter in diameter, and had a firm grey floor, with round thick edges. At one spot it had perforated the coats of the organ and communicated directly with the abscess. The bronchi were filled with pus derived from the abscess."

Of fifty-one cases of perigastric abscess in which there is clear evidence as to the cause, six were associated with cancer, four with abscesses, commencing externally to the organ, whilst forty-one were due to the irritation of simple ulcers.

You are well aware that gastric ulcers are more common towards the pyloric than the cardiac end of the stomach, but of nineteen in which the site of the ulcer coexisting with a perigastric abscess is recorded, eleven were at the cardiac and only eight at the pyloric end. Of sixteen in

* I beg most heartily to thank my colleagues who have so kindly placed the notes of their cases at my disposal.

which the position of the ulcer is stated as regards the curvatures, thirteen were on the smaller and three in the larger; whilst three were on the anterior and five on the posterior wall. The unusual number of the ulcers in these cases at the cardiac ends suggests the suspicion that the greater fixity of this portion of the stomach may be the reason why localised abscess is more prevalent in this situation than at the pylorus. This seems to be supported by the fact that adhesions, apart from those forming the walls of the abscess, are often mentioned as existing between the stomach and some of the neighbouring organs, and that very frequently the perforation had taken place at the point where the parts were thus united. Twenty-two cases of adhesion are recorded, and as no doubt this matter often escaped observation, they were probably present in the greater number of those affected with this form of abscess.

In some the small size of the perforation is expressly mentioned, and in five instances no communication could be found between the abscess and the ulcer, although they were in close proximity. The conclusion in such instances has been drawn that the perforation had healed after the formation of the abscess, but I would throw out the suggestion that in some of these cases there may have been an abscess originating in the coats of the stomach itself, which had set up suppuration by discharging its contents externally.

There is another supposition worthy of consideration, viz. whether an inflamed ulcer of the stomach may not be able to set up suppuration in newly-formed tissue external to it, in the same way as we before found, in some of the cases of perinephritic abscess, suppuration was produced around a tubercular kidney, although the capsule of the organ remained intact. The following case seems to show that an abscess of this kind may also originate in pyæmia:

Case 4.—A man, aged forty-seven, was admitted under the care of Dr. Stephen Mackenzie. "Eighteen months previously he had suffered severe pain in the epigastrium, increased one hour after food; one month

ago he was attacked suddenly with severe pain of the abdomen, having for two or three days before been greatly constipated. A mass the size of a cricket-ball was discovered in the left iliac fossa, which was nodular and painful on pressure; dulness on percussion and distant breath-sounds were also found at the base of the left chest. A few days afterwards the abscess was opened and eight ounces of very fetid pus were evacuated. This was, however, followed by erysipelas, and as his breathing became difficult, the left chest was aspirated and forty ounces of pus removed."

Post-mortem examination.—It is stated that there "was contraction of the descending colon and an abscess in the abdominal walls," but the notes on this point are very scanty. "There was also an irregular contraction of the stomach around a point midway between the cardiac and pyloric ends, and at the base of this a circular depression where it was adherent to the left lobe of the liver. External to the adhesion, there was a small abscess below the stomach, left lobe of liver, and diaphragm. The stomach was much thickened around the ulcer, and an abscess the size of a hen's egg was situated below the capsule of the spleen. The left pleura contained pus."

You will observe here that the patient had suffered from symptoms of gastric ulcer for eighteen months, but the formation of pus, which was small in quantity, had in all probability only taken place lately. As it was accompanied by an abscess in the spleen and in the abdominal walls, and pus was also found in the left pleura, it is most probable that they were all due to a common cause—viz. to pyæmia resulting from the abscess in the iliac fossa.

When the state of the ulcer is mentioned, it is in all cases such as accompanies a chronic ulcer, and in some the perforation is said to have taken place in the cicatrix of an old ulcer. The coexisting condition of the organ itself points to the same conclusion. Thus in four the stomach was much contracted, in three the coats were thickened, in two it is mentioned as dilated, in one there was narrowing of the duodenum, in one of the œsophagus, and in three of the pylorus.

The facts we have now ascertained will, I think, suffice to show under what circumstances a perigastric abscess is most likely to take place—viz. when adhesions have occurred between the stomach and some of the neighbouring organs, and the ulceration either proceeds very slowly to

the surface, or the perforation is so minute that only a very small portion of the gaseous or liquid contents of the organ finds its way into the space limited by the adhesions. Such conditions are of course most likely to occur when the coats of the organ have been thickened by long-standing disease, and when the ulceration is situated at some place that can readily contract adhesions to the neighbouring parts.

In thirty-four of the cases collected the pus eventually made its way either into the cavity of the chest, through the abdominal parietes, or into one of the neighbouring organs. When you remember the power of the gastric fluid of digesting animal substances, you will be tempted to ask whether this unusual tendency to perforation of the neighbouring structures may not be partly the result of the contents of the abscess being in communication with the interior of the organ. In support of this one case can be quoted in which no remains of the pancreas could be discovered, its site being occupied by the pus; and in two others the opening of the stomach into the pleura is stated to have been very large. But, putting aside these cases, there is not much evidence in favour of such a supposition, for the openings into the stomach are generally recorded as being very small, and no appearances similar to those of post-mortem digestion have been noticed. This probably arises from the fact that the communication between the stomach and the sac was not very free, or the whole contents of the latter would have been discharged through the intestines. As a consequence of this, little or no gastric juice would become mixed with the pus, and thus the vitality of the neighbouring structures would be a sufficient protection against their solution. It is, however, evident that in cases of this kind there is a great tendency to decomposition, arising probably from the entrance of gas and other products of fermentation from the stomach, for the pus is usually described as "ichorous;" in three instances the spleen was found to be greatly softened, in six there was pneumonia, and in two there was also gangrene of the lung.

We before found that the greater number of perigastric abscesses were in immediate contact with the diaphragm, and it is therefore not surprising that the cavity of the chest has been more frequently perforated than any other part. This occurred in twelve of those I have collected, and where there was a communication with the stomach, of course, both air and fluid were present in the pleura, but in cases, such as we have before seen sometimes occur, where there was no direct opening into the organ, pus alone was met with. Occasionally adhesions had taken place in the pleura, dividing it into separate compartments filled with pus, but this was a very unusual condition.

You will remember that we remarked in a former lecture that perinephritic abscesses were also liable to perforate the diaphragm, and it will naturally strike you as strange that this should be so common in abdominal abscesses, whilst, as you know, perforation from the chest into the abdomen is unusual. The reason of this difference I believe to be that in empyema the fluid has a ready means of escape by perforation of the lung or through the intercostal spaces, whilst in the abdomen it is pent up by adhesions, and closely surrounded by organs with thick and vascular coats. But empyema was also sometimes present even where perforation of the diaphragm was not discovered; and the most reasonable explanation of this is that some of the contents of the abscess were absorbed by the lymphatics of the diaphragm, which, as you are aware, are very large and active in this structure.

Considerable difference existed as to the liability of the sides of the chest to perforation, it having been recorded in ten cases on the left, and in only two on the right side, but this, of course, arises from the greater number of abscesses being situated in the left side of the abdomen.

I have only found three cases in which perforation of the pericardium took place, the entrance of the fluid, of course, setting up sudden and violent inflammation of the membrane.

In twelve cases perforation of the abdominal parietes is

recorded, the pus being discharged externally, and leaving a communication between the surface of the body and the stomach. Seven of these seemed to have originated in gastric ulcer, one in cancer, whilst in four the abscess commenced outside the stomach, but afterwards perforated its coats. This termination of perigastric abscess is extremely rare, and many seem to have been placed on record only because they are so uncommon. I find the following example in our post-mortem books, but I have been unable to obtain any history of the patient during her life.

Case 5.—The patient was a female, aged thirty-five, admitted under the care of the late Mr. Maunder. "An incised wound to the right of the umbilicus communicates with a large sinus-like cavity. Beneath the left lobe of the liver, and in front of the stomach, is a quantity of reddish grey, juicy substance, which looks like encephaloid cancer. On a level with the incised wound the abdominal wall is adherent to the omentum, and this firm adhesion encloses the liver, stomach, and upper part of the duodenum in one cavity. The colon is empty and does not communicate with it. The small intestines are normal. A bougie is seen to pass from exteriorly into the stomach at the pyloric extremity, and this fistulous opening admits the introduction of a finger, so that the contents of the stomach must have escaped out of the abdominal walls. The pyloric end is invaded by cancerous masses, its surface being irregular and ulcerated. Close to the pylorus, at the greater curvature, the walls of the stomach are absent, having been completely destroyed by the cancerous ulceration, and it is here that the external opening communicates with the organ. A little to the right of the opening the stomach is contracted by firm fibrous thickening, and only admits two fingers. The glands along the spine are cancerous."

The foregoing is a good illustration of the terrible destruction often wrought by gastric cancer; but, as a rule, the formation of an abscess is not common in such cases, the morbid growth tending to invade and consolidate the neighbouring structures, instead of inducing suppuration. Still, you must remember that the formation of pus does occasionally occur, for I lately diagnosed tubercle of the peritoneum chiefly on the ground of the presence of an abscess under the abdominal walls, but post-mortem examination showed I was wrong, and that it was the result of malignant disease.

Perforations are noted as having occurred into most of the neighbouring hollow organs; thus in one instance the stomach, duodenum, and colon communicated with the same abscess, in seven there was an opening into the colon, in one into the small intestine, and in one into the gall-bladder. In eleven there was more than one ulceration in the stomach, and in some instances more than one ulcer opened into the same abscess. The sex was recorded in forty-one cases of perigastric abscess arising from ulcer, and of these twenty-five were females. Dr. Brinton concluded from his inquiries that females were twice as liable as males to gastric ulcer, so that if we can trust to so small a number of cases as I have collected, males are more apt to have epigastric abscess than the weaker sex. The ages are given in thirty-seven cases of perigastric abscess, and I have compared in the following table the percentages at different ages with those given by Dr. Brinton of 226 cases of gastric ulcer.

	Under 20.	20—40.	40—60.	Above 60.
Percentages of gastric ulcer	9 ...	37 ...	31 ...	23
Percentages of perigastric abscess	19 ...	56 ...	19 ...	6

You will here see the greater proportion of cases of perigastric abscess is in the earlier period of life, when the vital powers are strongest, and when there is, therefore, the chief tendency to adhesive inflammation, the greatest number occurring between twenty and forty, and very few presenting themselves after sixty years of age. It seems to point to the same conclusion at which we before arrived—viz. that the main predisposing cause of the disease is the formation of adhesions which, in case of perforation, prevent the escape of the contents of the stomach into the general cavity of the peritoneum.

Let us now inquire into the state of health of the subjects of perigastric abscess previous to their final attack of illness. I have been able to collect the history of twenty-four cases as regards this point, and only two of the whole number are said to have previously enjoyed good health. But when the details of the post-mortem

examinations of these cases are investigated, it is evident that their histories must in this particular have been inaccurate, for in one the perforating ulcer is described as having "round and smooth edges," characters that would only be afforded by an ulcer of some duration, and in the other a cicatrix is described as existing opposite the perforation. With respect to the remaining twenty-two, the great length of time during which the symptoms of gastric ulcer had been experienced is very striking; thus, only two had complained of them for less than one year, eleven had been ill from one to four years, four for periods varying from eight to thirty years, and of five it is recorded "they had suffered for many years."

In every case pain of the epigastrium or abdomen had been the chief subject of complaint, and in most there had been also signs of dyspepsia; in seven vomiting was a prominent symptom, but in only two is there any mention of hæmatemesis. The absence of hæmorrhage is important, as confirming what we know from the histories of the cases, that the ulcers are usually of long duration; for this symptom is the result of an extension of the disease, and is rarely an accompaniment of an old indolent sore. The symptoms of course varied according to the part of the stomach which was the seat of the ulcer. For example, in the following rare case, which was admitted into the hospital under the care of Dr. Langdon Down, the ulceration had produced a narrowing of the lower end of the œsophagus, and the symptoms were those of stricture of this part.

Case 6.—A female, aged forty-two, had been ill for nine months. At first she suffered from difficulty in swallowing, which gradually increased, and for the last two months she has been unable to take any animal food. "When she attempts to eat it retching comes on, but she has no pain except when eating." She was very weak and feeble, and had been losing flesh. Expiration much prolonged at each apex.

Post-mortem examination.—"The peritoneum was covered with recent lymph, and tubercles were scattered over the intestines and mesentery. The stomach was adherent to the left lobe of the liver, and when the adhesions were separated there was thick greenish matter like inspissated

pus. The pyloric end of the stomach was not thickened, but there was an ulcer at the œsophageal end the size of a crown piece, with indurated edges; the œsophageal end was pushed aside, indurated, and bounded by thick tough tissue, and the solid fibrous tissue which surrounded the œsophagus extended for one inch upwards. The upper fourth of the lungs was fibroid, and there were cavities the size of walnuts in them."

As both the lungs and the neighbourhood of the gastric ulcer in the above case were the seat of fibroid thickening, it is probable that there was some common cause capable of producing it. There was no history of syphilis, but considering how often both the stomach and the lungs are affected by this disease, it is possible that it may have been the cause of the mischief in both. Ordinary tubercular affections are not a common accompaniment of perigastric abscess, for I have only been able to collect five cases in which they coexisted.

The final illness of which the patients affected with perigastric abscess died was usually ushered in by severe symptoms, and was of short duration. In seven out of twenty-three cases in which details are afforded, sudden collapse occurred, accompanied or followed, as soon as the collapse passed off, by pain of the abdomen or of the epigastrium, along with tenderness on pressure, distension, and other symptoms of peritonitis. In eleven there was no collapse, but the pain in the epigastrium is recorded as having suddenly become more severe.

Rigors are mentioned only in three instances; in one as associated with collapse, and in the others as accompanying severe epigastric pain. Of the five cases in which the formation of the abscess was not ushered in by collapse or increased epigastric pain, one was suffering from phthisis and one from cancer, affording an example of what we have in a former lecture had to point out to you, that abdominal abscesses may occur in persons who are in a very feeble state of health, without any well-marked symptoms. The third case was admitted into a hospital with symptoms of pneumothorax, arising from perforation of the diaphragm by the abscess; and you can easily

understand how in such a condition the patient may have been unable to afford any distinct history of her former state of health, and consequently the symptoms indicating the formation of an abscess may not have been recorded. In another the first symptoms were severe constipation and vomiting; and the fifth case had for a length of time been affected with an abdominal tumour which suddenly burst into the stomach, and was rapidly followed by fatal exhaustion.

We are justified, then, I think, in concluding that in every case of perigastric abscess, excepting where it occurs in persons affected with phthisis, cancer, or some other chronic exhausting malady, the first formation of the abscess will be accompanied either by collapse and signs of general peritonitis, or by sudden and severe pain of the epigastrium, attended with indications of local peritonitis.

The absence of repeated rigors is worthy of remark, as it may often enable you to exclude this condition where the diagnosis is doubtful. A patient, for example, is at present in my wards who was admitted with severe rigors occurring daily, as in ague. This and the absence of any history of gastric or duodenal ulceration enabled us to exclude local peritonitis; and as he has been for three or four weeks expectorating lung tissue, and there are signs of consolidation at the base of the lung, it is probable, as was at first conjectured, that an abscess in or near the liver has perforated the diaphragm.

On inquiring into the course of perigastric abscess, it will be advisable to separate such as commenced with symptoms of collapse from those in which this was not present. Looking, then, at the collapsed cases, we find that in one instance this condition persisted until death, which took place in twenty-two hours; but it was found on post-mortem examination that the abscess had been present for some time and had burst into the peritoneal cavity. In the others the collapse gradually decreased, and the patient chiefly complained of severe and continuous pain in the abdomen or epigastrium, with tenderness on

pressure, distension, and fever. Vomiting was a prominent symptom in one case and diarrhœa in another. In five perforation either of the pleura or pericardium occurred, and in two the patient complained of a sensation as if something had suddenly given way.

In five cases in which the duration of life is given, the average of the last illness was thirty days. Details are afforded in nine cases where collapse was not present, and in all severe and continuous pain in the abdomen or epigastrium persisted until death, attended with tenderness on pressure; but there is no record, as we should have expected, of constant vomiting. In one pus was vomited, but there is no notice of hæmatemesis.

In five pleurisy was set up: in four of these by perforation of the diaphragm.

The average duration of life was less than in the collapsed cases: four died within two weeks, and two lived more than a month after the commencement of the fatal illness. Fever is mentioned in nearly all as a prominent symptom, but I have been able to find only one or two in which the course of the temperature is noted.

Occasionally temporary recovery ensues after the formation of the abscess, and instances are recorded where the patient was able to return to his employment, and was afterwards attacked with general peritonitis arising from rupture of the sac. We may suppose that in such instances the pus had become walled in by fibroid tissue, as in the following, which was admitted into this hospital under the care of Dr. Hughlings Jackson.

Case 7.—Male, aged fifty-one. "He met with an accident two years ago, and then vomited blood. He has since suffered from pain of the stomach, not increased by food. For the last week he has suffered constant pain; the abdomen is distended; has had nausea, but no vomiting. The pain is increased by the act of breathing."

The next day he is mentioned "as lying on his back and as moving very cautiously; the pain was chiefly in the epigastrinm, but he shrieked out directly the abdomen was touched. The lower part of the chest and of the abdomen were quite hard and rigid." On the following day there was noticed a friction-sound at the left base.

Post-mortem examination.—"A chronic ulcer of the stomach along the lesser curvature, nearer to the œsophageal end, which had perforated all the coats. Old perforations and adhesion of the stomach to the liver, and an abscess was situated a little above the ulcer. The stomach was firmly adherent to the under surface of the liver, and there was thickening between the left lobe of the liver and the œsophageal end of the stomach and diaphragm. On separating the stomach some pus escaped, and a cavity was opened, bounded above by the diaphragm, on the left by the diaphragm and spleen, on the outer side by the left lobe of the liver, and below by the stomach: so that the abscess was situated chiefly between the diaphragm and the stomach. It was surrounded by fibroid tissue, showing that it had existed for some months. The cavity was about an inch from the floor of the ulcer, being separated from it by fibroid tissue."

It will be observed that the patient complained of pain increased by breathing, and we can readily understand how such would be the case, as the abscess was in immediate contact with the diaphragm. I have not found this symptom noticed as a prominent one in the other histories I have collected, but it is probably not uncommon. In many of those in which perforation into the pleura is mentioned we have unfortunately very scanty details of the symptoms; but in those that are more carefully recorded the patients were suddenly attacked with severe pain of the side and urgent dyspnœa. In one rigors are said to have preceded the chest symptoms, as in Case 2; in another the patient became rapidly unconscious; one complained of a sensation as if "something had given way;" and in all the sudden pain was quickly followed by fever. In one only the pleurisy was accompanied by jaundice, but no light was thrown by the post-mortem examination on the cause of this condition.

Where the abscess opened into the pericardium still more striking symptoms were produced. One complained of a feeling "as if something had burst," and all experienced severe pain in the heart's region, accompanied by great dyspnœa; the pulse was very small and rapid, the extremities cold, the patients extremely restless, and death occurred on the third or fourth day after the accident.

Such are the usual symptoms observed in cases of epi-

gastric abscess, but occasionally the ordinary difficulties of diagnosis inseparable from such an obscure disease are increased by the coexistence of some other disorder. For example, a case was admitted under Dr. Sansom in which, on post-mortem examination, the following conditions were discovered :

Case 8.—"General peritonitis, dilated stomach, and stricture of the pylorus ; a large ulcer with sharp edges and a perforation in the centre of its base, and a large cavity between the walls of the stomach and the liver surrounded by organised lymph. There was also a large aneurysm of the abdominal aorta eroding three of the vertebræ, and also fibroid thickening and consolidation at both apices." Unfortunately, the history of this case is lost, but you can readily imagine what a complicated clinical picture it must have presented to the physician, and how impossible it would be to diagnose the state of so many important organs simultaneously affected.

You will observe that there is nothing very distinctive in the symptoms of perigastric abscess, but we shall find that in many instances the physical signs are very characterisic. When we examined the subject of duodenal abscess, we deferred the consideration of the physical signs accompanying it on account of their great similarity with those of perigastric abscess; and in the remarks I now propose to lay before you I shall include abscesses connected with both of these sections of the digestive tract. In a small number of cases, as has been before mentioned, no communication could be discovered between the ulcer and the abscess, although there was no doubt that the latter was the result of the irritation set up internally. The physical signs in such cases are, of course, somewhat different from those we have before mentioned, as the contents of the abscess consist of fluid only, and gas and liquid do not coexist, as in those that communicate with the interior of the digestive canal.

A tumour capable of being distinguished externally is mentioned in only six of the cases arising from ulceration of the stomach ; but it was almost always present where the disease was associated with cancer. The rarity of a

tumour in the former class is easily explicable when we remember that in most instances the pus lies very deeply, and is in relation with the diaphragm. But there is, I think, another reason which may account for its being so rarely recorded, and that is the very tense state of the muscles, especially mentioned in Case 2, that almost always accompanies any painful condition of the upper part of the abdominal cavity, rendering its exploration exceedingly difficult. Whenever a tumour was present it was very tender ; but in one instance it is stated that slight pressure produced no complaint, whilst deep pressure caused considerable suffering. In each instance the tumour at first felt hard, but this was soon replaced by the sense of fluctuation.

In most the percussion-note was at first dull, but afterwards tympanitic, and in all probability this took place on account of the tumour becoming more superficial. In one well-reported instance the sound was at first dull, afterwards tympanitic, then lessened in bulk after an attack of diarrhœa, and finally disappeared, the contents of the abscess having been discharged through the diaphragm. In another the line of dulness varied according to the position of the patient, showing that the cavity was of considerable size, and that it contained both air and liquid. One reporter mentions what is an important sign in the diagnosis of these tumours—viz. that it was immovable both on full inspiration and by external pressure.

There are other signs which will assist you to ascertain the presence of a tumour situated below the diaphragm, whether its contents are only fluid or also contain air. Thus the affected side may be enlarged more than the opposite one, a point which can be determined by measurement or by the eye. Generally the lower ribs are thrown outwards, so that the angle formed by the edge of the hypochondrium and a line drawn from the ensiform cartilage to the umbilicus is larger than that of the opposite side. In a small number of cases the pus was in contact with the ribs, and where such is the case one or more of the inter-

costal spaces may be discovered to be unusually wide. You have seen lately two instances in which the diagnosis of a hydatid tumour was determined by means of a similar observation. In each there was no decided epigastric tumour and no bulging in the upper line of the hepatic dulness, but the lower ribs on the right were higher than those of the left side, while the hypochondriac angle and the breadth of one of the intercostal spaces were increased. In each case a deep exploratory puncture was made between the ribs, and the cyst was successfully emptied.

When there is a collection of pus situated just below the diaphragm the organs below it are of course depressed. In one instance a tumour was discovered in the region of the spleen, as in Case 2 ; in another the lower edge of the liver extended a considerable distance below the hypochondrium. This displacement would be a most valuable indication of all subphrenic tumours, were it not, as has been before stated, that the abdominal muscles are usually in such a state of tension that the necessary examination is attended with great difficulty.

It is important to bear in mind that the change in the position of the heart is either very slight, or the organ is only tilted upwards by the fluid beneath it. In pleuritic effusion, as you are aware, it is pushed towards the opposite side, but in subphrenic abscess this does not occur.

In all cases, unless the abscess is of very small size, the diaphragm is thrust upwards, and the lower lobes of the lung are compressed ; consequently there is dulness on percussion, which is more evident behind than in front. You can distinguish this from a collection of fluid, as the tactile fremitus is increased, and is accompanied by diminished respiration and generally by fine crepitation. In most of the reports the dulness is said to have reached as high as the angle of the scapula, and the line of dulness in front is also stated to have been higher than in the normal condition. I have not met with any remark as to the line of dulness being curved, as is not unfrequently the case in hydatid and other cysts of the liver ; but this pro-

bably arises from the fact that the dulness is the result of the compression of the lung alone, the abscess being more deeply situated than in the case of hepatic cysts.

You must bear in mind that an abscess in connection with the stomach generally contains both air and liquid, and is therefore in a similar state to a pleura which is the seat of pneumothorax; consequently the sounds, such as amphoric respiration, metallic tinkling, and splashing on succussion, which are usually looked upon as characteristics of the latter, may also present themselves in the former condition. This was first pointed out in a case published by Dr. Barlow and Dr. Wilks as far back as the year 1845, and these observations have been since confirmed by many other observers. The amphoric sounds are, however, generally not confined to the thorax, but can be often heard over the whole abdomen, and in some instances are audible to the lower border of the spine.

There are no special physical signs when the abscess bursts into the pleural cavity. If it has contained air, the ordinary evidences of pneumothorax present themselves; but if only fluid, then the signs of pleuritic effusion can be recognised. In one instance, when the chest had been aspirated, the fluid removed was found, on microscopical examination, to contain particles of food, proving, of course, that the mischief had originated in the digestive canal. Where the abscess opens into a lung previously adherent to the diaphragm, pneumonia is set up, and you may find by microscopical examination particles of lung-structure in the sputa.

In the rare cases where a perigastric abscess has burst into the pericardium, physical signs of great interest have been remarked. The pericardium, being distended with air, presented a clear note on percussion, instead of the normal dulness, whilst the motions of the heart were accompanied by a metallic sound, which in some cases was loud enough to be heard by the side of the patient's bed.

As you may readily imagine, there is often great difficulty in the diagnosis of perigastric abscess, and you are

liable to confound it with a number of tumours situated in the upper part of the abdomen.

You will frequently see in the wards hydatid cysts presenting themselves in the left hypochondriac region, and when they suppurate you may easily mistake a perigastric abscess for one of those tumours. But the history of a hydatid cyst is very characteristic; it is often discovered by accident, and has generally been for a considerable length of time unattended by pain or any other inconvenience, excepting such as may arise from its bulk, there has been no previous emaciation or deterioration of the general health, no pain after food or vomiting. A hydatid tumour is always dull on percussion, is not lessened by diarrhœa or vomiting, can be generally shown by careful manipulation to be in connection with the liver, and, unless adhesions have been extensively formed, it moves with the respiration or by pressure.

You are more likely to mistake a perigastric abscess for a hepatic abscess, unless you bear in mind that the latter almost always arises from dysentery or an affection of one of the abdominal organs whose circulation is connected with the portal system. It chiefly occurs in persons who have lived in the tropics, and have been previously healthy; its course is acute, is usually attended with repeated rigors; the tumour is quite dull on percussion, is never tympanitic, and is never accompanied by signs of pneumothorax. As has been already pointed out, in some of the cases of perigastric abscess the signs of pneumothorax have been observed where there has been no perforation of the diaphragm, and consequently a mistake in diagnosis has often been the result.

Forty years ago two cases of this kind were correctly diagnosed by Dr. Barlow, and of late the characters distinguishing these conditions have been clearly pointed out by Dr. Leyden. In pneumothorax there is usually a history of cough, dyspnœa, hæmoptysis, or other signs of pulmonary disease; whilst in perigastric abscess the patient has previously complained of pain after food, dyspepsia, or

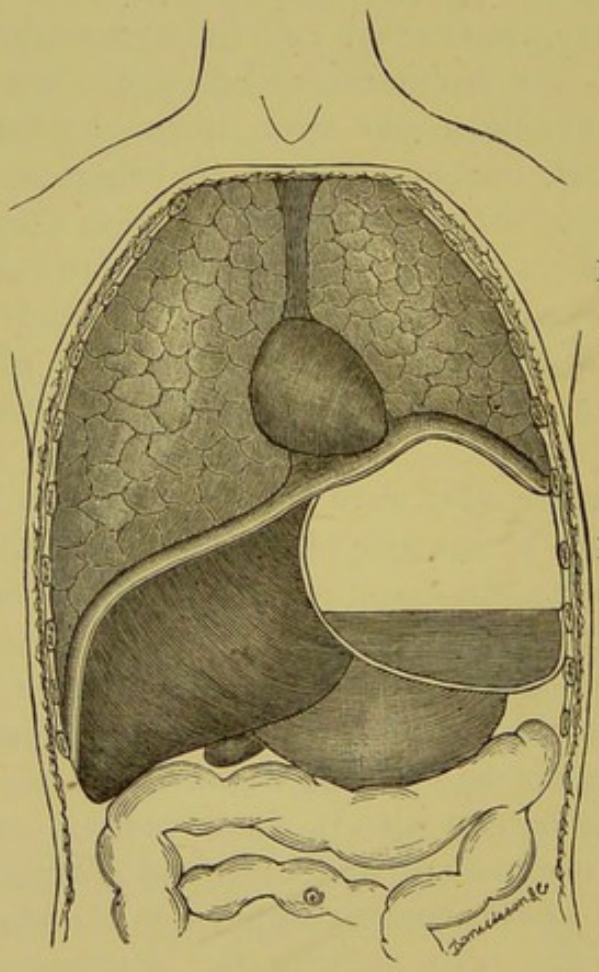
other symptoms pointing to disorder of the digestion. In the former the whole of the affected side is enlarged, the intercostal spaces are flattened, and the movements of the chest are everywhere absent; whilst in the latter only the lower part of the chest is distended, and the upper portion of the affected side moves in breathing. In pneumothorax there is an absence of the respiratory murmur and of the tactile fremitus all over the affected side; whilst in perigastric abscess the respiratory murmur can be heard for some distance down the side, and is audible at a lower point in forced respiration than in ordinary breathing. In addition to this, the amphoric sounds are often audible over the whole abdomen, and even to the bottom of the spine in perigastric abscess, instead of being confined to the immediate neighbourhood of the thorax; the heart is generally pushed to the opposite side in pneumothorax, but is only tilted upwards in the case of perigastric abscess. The accompanying diagrams (Figs. 7 and 8) will make these distinctions more plain to you than a mere verbal description.

There is another very rare condition which in some respects resembles perigastric abscess and might lead to a doubt in diagnosis. In diaphragmatic hernia portions of the abdominal viscera find their way into the pleura, which is almost always the left, and you will remember it is also the left side which is commonly affected in perigastric abscess. As the pleura contains organs filled partially or wholly with air, there is also in such cases a tympanitic note over the lower part of the chest, and often a metallic sound when the stethoscope is applied to the part whilst percussion is made near it with the pleximeter. The various amphoric sounds are also audible, as in the case of pneumothorax and of perigastric abscess, where there is a communication between the abscess and the stomach.

There are, however, well-marked points of difference between these conditions. Perigastric abscess is preceded by symptoms of ulceration of the stomach; diaphragmatic hernia is mostly the result of injuries, although in some

instances it is congenital. The former is always accompanied by severe pain, tenderness of the part and fever; the latter, unless strangulation has taken place, may be without any symptoms, or these may be only temporary—such as dyspnœa directly after food, dependent on the pressure of a distended stomach. In perigastric

FIG. 7.—Diagram of the physical signs in perigastric abscess containing both air and liquid.

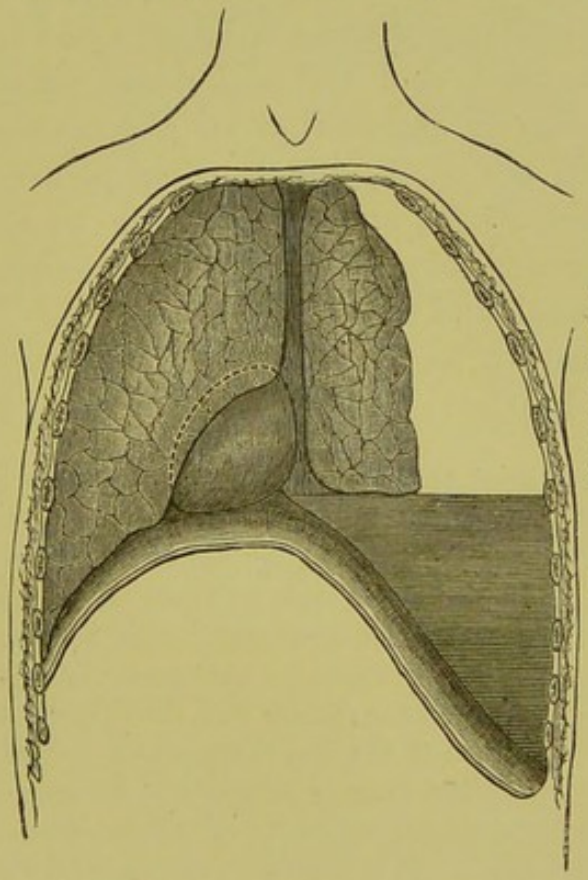


abscess the heart is tilted upwards, and the abdomen is tense, tender, and prominent; in diaphragmatic hernia the heart is pushed to one side, and the upper portion of the abdomen is flattened or retracted. In the former the physical signs may vary from day to day; but in the latter they frequently alter, even whilst the patient is under

examination, and especially as soon as he has taken food or drink.

It will be quite evident that, as perigastric and periduodenal abscesses are usually the result of ulceration commencing in the interior of these organs and perforating their coats, we are powerless to prevent the formation of pus by medical treatment.

FIG. 8.—Diagram of a case of pneumothorax.



In the early stages we must insist upon perfect rest, the least movement of the body being strictly prohibited; the withdrawal of all food, excepting what is absolutely necessary for the maintenance of life; and the administration of opium, in order to relieve pain and prevent vomiting. In most cases the patient should be fed by means of nutrient enemata, and only small pieces of ice should be allowed to be sucked in order to alleviate thirst. When we have clear evidence of the formation of an ab-

scess, the treatment can only be surgical, an opening being made into the abscess and a drainage-tube inserted.

But the question will naturally occur to you whether a favorable issue to such a case can be fairly anticipated if such measures should be adopted. In answer to this question, let me remind you of the number of cases on record in which patients have survived, and, in fact, enjoyed good health, after a communication had taken place between the stomach and the external surface of the body. It is true that in many of these adhesions had been formed between the stomach and the abdominal parietes, but in others it is distinctly stated that an abscess was first discovered in the abdomen, which subsequently burst externally. Cases, again, are on record in which the contents of the abscess seem to have been evacuated through the digestive canal, and the patient recovered. The following very interesting and instructive example is recorded by Dr. Hilton Fagge :

Case 9.—A man, aged thirty-seven, who had always enjoyed good health, nine months before his admission into Guy's Hospital was kicked by a man on the left side. A swelling formed there, and gradually increased in size. Twelve days after his admission he vomited a small quantity of blood, which recurred next day. The tumour is described "as a rounded mass extending deeply, so that no lower edge to it can be felt. Its inner border reaches the middle line of the body, and it reaches downward to within an inch of the umbilicus. It is perfectly dull except along its inner border. Here there is a tympanitic resonance, less clear, however, than over the adjacent stomach. The heart's impulse cannot be felt below the nipple at all. It is felt above the nipple between the third and fourth ribs, and also above the third rib. On listening to the heart's sounds in this position they are perfectly natural ; but below the nipple very curious gurgling sounds are audible, synchronous with the heart's beats. They are of a metallic or musical quality, the systole being often accompanied by several distinct tinkling sounds."

At a subsequent date it is recorded that "the gurgling sounds can now be heard without the aid of the stethoscope, and even at the distance of three feet from the patient, but they are not constant. There is now tympanitic resonance over the tumour, except when he lies on his left side ; this causes the disappearance of the tympanitic percussion-note."

He was discharged from the hospital at his own request, "but he came back some time afterwards, and said that the tumour had suddenly dis-

appeared, having discharged a quantity of matter which I suppose he must have vomited, although there is no note of the fact in the report. On examination it was found that he was right in stating the tumour was no longer to be discovered. The man appeared to be quite well."

Now, although the foregoing case differs from most of those we have before examined, inasmuch as the abscess would seem to have commenced externally to the stomach and to have been the result of an injury, yet the vomiting of blood, the well-marked physical signs, and the eventual disappearance of the tumour after a discharge of pus, seem to prove that there was a communication between the abscess and the stomach, and if so, that cases of perigastric abscess may terminate favorably. But you will remember that in a large proportion of cases perforation of the diaphragm takes place, and pneumothorax or acute pleurisy is set up before the existence of the abscess can be clearly made out. Does this condition, then, admit of recovery? Let me quote you a case of Dr. Tilmann's, bearing upon this question.

Case 10.—The patient was a boy, previously in good health, who, after an apparently slight injury, complained of pain in the region of the liver. On the third day the pulse became rapid, the temperature rose, there was no vomiting, but the bowels had not acted for three days, and the hypochondrium was tender. The bowels were opened by an aperient; but on the eighth day there was some exudation into the right pleura, with a tympanitic percussion-note in one part of the chest.

On the fourteenth day, after a full meal, the patient was attacked with severe pain of the right side, and there was a dull note on percussion all over that side, with the exception of a space in the upper part, where the note was tympanitic. The chest was aspirated, and a fluid resembling a fine emulsion of fat was removed, containing small particles of starch. A drainage-tube was inserted, and subsequently particles of food were discovered in the fluid evacuated through it. Notwithstanding this, the patient gradually recovered, and was dismissed cured six months after the onset of the illness.

The commencement of the illness in the above case immediately after the receipt of a trifling injury was probably only accidental, and the patient had most likely had previously an ulceration of the duodenum. The pre-

sence of air, however, in the pleura and the withdrawal from it of fluid containing particles of food prove that there was a communication between the cavity of the pleura and some part of the digestive canal. But this case also shows conclusively that treatment may be successfully adopted, even in circumstances that appear to be most unfavorable, and that a communication with the interior of the digestive tube does not necessarily prevent a favorable termination as a result of surgical interference.

LECTURE VII.

TUBERCULAR PERITONITIS IN THE ADULT.

Gentlemen,—You will perhaps feel surprised that I should include the disease to which I wish to-day to draw your attention—viz., tubercular peritonitis—amongst those that can be said to be difficult of diagnosis. It is true that in the form you so often see in the children's wards the nature of the complaint can be scarcely overlooked. The old-looking, shrunken features of the child, the tumid abdomen, contrasting so strongly with the wasted limbs, at once direct your attention to the seat of the mischief; whilst the history of frequent attacks of pain, the tenderness on pressure, the obstinate diarrhœa, lead you so certainly to a conclusion as to the nature of the complaint that you feel it scarcely necessary to verify your diagnosis by a careful examination of the affected part.

But in the case of adults you often encounter difficulties that require all your skill and tact to overcome, and not infrequently it is necessary to rest your diagnosis rather upon the state of other organs than on that of the peritoneum itself. In some the symptoms point only to a general febrile condition, and the ordinary indications of peritoneal inflammation are absent, or are masked by others of a more prominent character. So much may this be the case, that no suspicion as to the true nature of the disease may cross the mind of the practitioner until it is revealed by the post-mortem examination.

Even in the more chronic forms well-marked local manifestations may be for a long time absent, and you may

be led to direct your treatment to organs which are only secondarily affected, or the symptoms of the abdominal malady may entirely disappear or be replaced by others, so that you are left in doubt whether your first diagnosis had not been incorrect. Such being the case, the records of the disease in our clinical and post-mortem books can, I think, scarcely fail to supply us with some materials for profitable consideration.

Tubercular disease may affect the peritoneum under two forms. In one the tubercles are scattered over the serous membrane without coexisting peritonitis, and consequently no abdominal symptoms present themselves during the life of the patient. It is, in fact, only a local expression of a general condition ; it cannot be diagnosed during life, requires no special treatment, and has consequently no clinical importance.

In the second form the tubercles are associated with inflammation, the prominent signs during life are those of peritonitis, and the chief changes discovered by post-mortem examination are those arising from inflammation of the serous membrane. It is to this form of tubercular affection of the peritoneum that I propose in the present instance to direct your attention.

I find, then, in our post-mortem records forty-two cases of peritonitis attended with tubercles in persons above fourteen years of age ; and, in addition to these, five others in which, although the presence of tubercles is not expressly mentioned, the descriptions given render it almost certain that the peritonitis was of this character. I propose to analyse these forty-seven cases and lay the results before you.

As we shall afterwards find that the physical signs of the disease are of the greatest importance in diagnosis, it will be necessary for us, then, first to ascertain the condition in which the abdominal viscera are generally found after death, and whether other organs besides those covered by the peritoneum are also affected. In the discussion of these points I will restrict myself to the cases recorded in

the post-mortem registers of the hospital, and you must bear in mind that in most instances the chief morbid changes are the result of the inflammation of the serous membrane, and have no necessary relation to the tubercles which have excited it.

As might have been expected in a complaint that often requires weeks or months to run its course, recently effused lymph was comparatively rarely met with; thus it was only found in eight cases out of the whole number, and in some of these it was evidently the result of a recent attack supervening upon a chronic condition, as it was associated with other changes that indicated a long continuance of the disorder.

In most instances the lymph had become organised before the termination of life, and thus general adhesions of the abdominal viscera had been produced. This condition is mentioned as present in twenty-six out of the forty-seven cases; in most of these the intestines were so firmly agglutinated that they could not be separated without their coats being torn; but in a few instances the inflammation had been more recent, so that the parts could be disunited, although with difficulty. This general massing together of the viscera often affords a striking indication of the disease during life by the alteration it produces in the shape of the abdomen, and, as it occurred in so large a proportion of the cases recorded, it should always be looked for in the later stages.

The peritoneum was thickened in twelve cases; in one the thickening amounted to three quarters of an inch, and in another to one inch in thickness. A cheesy formation was found in three instances between the adherent coils, probably produced by the degeneration of masses of tubercle; and in one there was extensive caseation of the abdominal parietes a little above the umbilicus; in only one the caseated material had become cretaceous. I need not point out the importance of this thickening of the serous membrane as regards diagnosis, as it must alter the percussion note in that part of the abdomen in which it is

situated, and may lead to an erroneous impression as to the existence of a tumour.

The usual condition producing a tumour was thickening of the omentum, this part being consolidated into a mass by lymph and tubercle. In eight cases out of the forty-seven it is recorded as having been "greatly thickened with lymph and tubercle," or "rolled up," or "puckered up," so as to form a considerable tumour, which was either stretched like a band from one hypochondrium to the other, or was situated in the umbilical region. Next in frequency to the omentum the capsule of the liver was thickened; in one instance it is recorded as having been "as hard as cartilage and greatly thickened." The neighbourhood of the spleen was also in some instances the seat of a tumour; in one it was one pound in weight, was composed of lymph and tubercle, and enclosed the organ on all sides. The mesentery was frequently found to be thickened, and by its contraction had dragged together the intestines, which were united firmly by adhesions. When, as is often the case, there is also a collection of fluid, the abdomen may be so altered in appearance as to lead to great difficulty in diagnosis. The mesenteric glands were rarely enlarged to such a size as to present the appearance of an abdominal tumour.

In the tubercular peritonitis of adults, therefore, the chief conditions producing a tumour are either a thickened omentum, lymph situated around the spleen, or an alteration in the shape of the abdomen produced by a collection of fluid walled in by lymph or by the neighbouring viscera united together by adhesions.

The effect of a general adhesion of the intestines is in most cases to constrict their calibre, or in some other way to impair their functional activity. In one case the bending and consequent constriction of the loops of the small intestine is especially noted; in another the lower part of the ileum is said to have been rendered almost impervious: in a third the colon was "greatly constricted;" whilst in another the whole of the large intestine was found to be

dilated from the cæcum to the sigmoid flexure, the former part being enormously enlarged. These results are not matters of mere pathological interest; they must be borne in mind if you would understand many of the symptoms that present themselves in the later stages of the more chronic forms of the malady.

In all probability fluid is effused into the peritoneal cavity at some period in every case, but it is usually absorbed before the termination of the illness. Nevertheless, in thirteen out of the whole number there was sufficient serum in the peritoneal cavity to induce the pathologist to describe it as "ascites." The fluid was in some instances confined in spaces surrounded by lymph. It is usually stated to have been serum, but in two cases it is mentioned as "bloody." In one of these there was a thickened omentum, and in the other the peritoneal cavity was full of recently effused blood, although the vessels from which it had escaped could not be discovered. Authors generally, I think, exaggerate the frequency with which bloody serum is found in tubercular peritonitis; for, according to my experience, this condition is rare as compared with cancer of the peritoneum. In only three instances the fluid is said to have been purulent; and this is worthy of remark, as we so frequently meet with suppuration in tubercular peritonitis in children. This infrequency in the present series may have partly arisen from the fact that I have included only cases in which the peritoneum seems to have been primarily affected; for most of those attended by suppuration are secondary to tubercular ulceration of the intestines or of the female genital organs.

It is a matter of interest to determine why the serum remains unabsorbed in some cases whilst it is absorbed in others. Now, of the thirteen cases I have just quoted, the amount of effusion is noticed as moderate in two and excessive in eleven. In four of these there is no mention of the co-existence of general adhesions, but in the remainder the viscera are described as closely united together. In five the peritoneum was greatly thickened; and in one,

although general thickening is not mentioned, there was a mass of lymph surrounding the spleen. In all the others, where there was no thickening there was cirrhosis of the liver. I think, then, we may conclude that the circumstances that gave rise to chronic ascites in tubercular peritonitis are either a thickened condition of the peritoneum, preventing the contact of the exudation with a well-developed vascular surface, or a cirrhotic condition of the liver that favours the continued exudation of fluid.

The condition of the lungs in those affected with tubercular peritonitis is especially important, as we often meet with practitioners who refuse to acknowledge a case of peritonitis to be of tubercular origin, unless there are well-marked evidences of pulmonary disease. Dr. Bristowe says that in forty-eight of the cases he analysed there were tubercles in the lungs in forty-two, and Dr. Hilton Fagge states the proportion to be seven out of nine. Now, in thirty-eight of our cases the condition of the lungs is expressly mentioned, and in five of them no trace of disease could be discovered. One of the five had died of acute pneumonia, there were also general adhesions of the abdominal viscera and old cretaceous deposits, proving the previous existence of tubercular peritonitis, and yet no tubercles had been developed in the pulmonary organs. In two more of the thirty-eight only a few scattered tubercles existed in the lungs. Cavities are mentioned in only nine, and of these five were instances of "fibroid phthisis." As in the remaining cases there were only "scattered tubercles" or "tubercular consolidation," we may conclude that it is comparatively rare for the peritoneal mischief to be developed in persons suffering from chronic phthisis, and that therefore the serous membrane is generally affected before the onset of the pulmonary disease.

Dr. Bristowe states that there was tubercular disease of the pleuræ in twenty-five out of forty-eight cases, and other authors have stated the concurrence of disease in these two serous membranes as still more frequent. In

twenty of our cases the state of the pleuræ is expressly mentioned; ten of these presented evidence of acute pleurisy, in three there were tubercles in the pleuræ without coexisting inflammation, in six there were general adhesions, and in one there was considerable thickening of the serous membrane. In all probability, then, some affection of the pleura will present itself in more than one half of the whole number of cases, but this is a proportion much less than I should have guessed had I judged from the frequency with which this co-existence is observed during the life of the patient.

When we consider how generally ulceration of the intestines is present in persons affected with phthisis, we might expect that a similar condition would be commonly met with in those who had died of tubercular peritonitis. Such, however, does not appear to be the case, for frequent mention is made in the records that there was no ulceration of the intestinal mucous membrane, and it is only noted in eight of the whole number, six presenting ulcerations in the ileum, one in the cæcum, and one in the cæcum, colon, and appendix. Ulceration of the mucous membrane seems to be more apt to be developed in cases of fibroid phthisis, for four out of five of those affected with this form of pulmonary disease presented it, whilst it was observed in only one out of seven where the lungs contained tubercles without fibroid change. I think it is most probable that the ulceration in the fibroid cases preceded the development of the tubercle of the serous membrane, and also that inflammation of the outer surface of the intestines has a tendency to prevent the occurrence of tubercular growth on the mucous surfaces.

In twenty-two cases the condition of the liver is mentioned; in one it is said to have been "cheesy," in one it was large, in one it contained tubercles, in three it was fatty, and in nine it was in a state of cirrhosis. This concurrence of tubercular peritonitis in the adult with cirrhosis of the liver has attracted a good deal of attention abroad, although it is but rarely mentioned in English works.

Seipert found ten cases of cirrhosis in sixty-eight of tubercular peritonitis, seven were observed in Leipsic out of fifty cases, and Wagner mentions ten that had come under his own observation. If we add to these numbers those in our records, we have twenty cases of cirrhosis in one hundred and sixty-five of tubercular peritonitis, or one in every eight.

It has been suggested by some writers that the hepatic change in these cases is the result of the peritoneal inflammation, whilst others have looked upon the cirrhosis as giving rise to the affection of the serous membrane, by the congestion of the portal system it produces. It has, however, been overlooked that the same abuse of alcohol that tends to produce cirrhosis predisposes also to tubercular disease. Thus I find one hundred and forty cases of cirrhosis recorded during the same period as that during which I have searched for those of tubercular peritonitis, and as there were only nine in which the disease of the liver was associated with this latter disorder, only one case of cirrhosis in every fifteen was affected with the peritoneal affection. Now, excluding these nine, lest it should be said that the tubercular affection of the peritoneum had given rise to that of the lungs, I find seventeen of the one hundred and thirty-one remaining cases of cirrhosis presented tubercular mischief in the lungs, or one in every seven, whilst five others had a "fibroid" affection of the same organs. It is plain, then, that the same habit of intemperance that gives rise to cirrhosis tends also to the production of tuberculosis.

But as tubercular peritonitis in the adult is very rare as compared with phthisis, we must regard cirrhosis as tending to the development of the disease in the peritoneum. This becomes more evident if we analyse the cases according to the ages at which they occurred. Thus one in every three of those affected with cirrhosis that died between twenty and thirty years of age presented tubercular peritonitis, the proportion rose to one in ten in those between thirty and forty, and was only one in every thirty-

nine of those above forty years of age. When we look at the cases of cirrhosis combined with tubercular affection of the lungs, the proportion is very different. One in six occurred between twenty and thirty, one in five between thirty and forty, and one in every eleven above forty years of age. But if we look upon the fibroid cases as also of a tubercular nature, then the proportion of cases presenting lung disease in the cases of cirrhosis above forty years of age was also one in six. The probable explanation, I suspect, of the occurrence of tubercular peritonitis in young persons suffering from cirrhosis is that inflammation of the serous membrane is more apt to be set up in those affected at an early age, and thus tends to the development of the tubercle in this situation rather than in the pulmonary structures. That the disease of the liver generally precedes that of the peritoneum is evident from the fact that in all the cases except one there was a history of intemperance, and in every case the symptoms of hepatic disease had preceded those of the peritonitis.

In sixteen of the cases of tubercular peritonitis the condition of the spleen is recorded, and in all the organ or its capsule was in an abnormal condition. In three there was much thickening of the capsule, in seven the organ contained tubercles, in seven it was much enlarged, and in one it was the seat of numerous abscesses, probably arising from pyæmia. This enlargement of the spleen is not necessarily the result of any local action around it, for the organ is usually found to be increased in size in all acute cases of tubercular disease. It is difficult to account for the small number of cases in which tubercle was found in the spleen, for Dr. Bristowe mentions that tubercles were found in this organ in twenty of the forty-eight cases of tubercular peritonitis he had collected.

The kidneys are stated to have been diseased in seven cases out of the whole number; in five they contained tubercles, in one the kidneys were dilated, and in two they were "granular." The bladder is only recorded as being

affected in two instances; in one it was "ulcerated," in another "tubercular."

It is often stated that, in the female, tubercular affection of the peritoneum is usually the result of a similar disease of the uterine organs. There are sixteen females recorded as having died of this disease, and of these only five presented morbid changes in the uterus or its appendages; in three there was a tubercular condition of the ovaries, and in only one is disease of the Fallopian tubes mentioned. But, in contrast with these facts, Dr. Hilton Fagge states that in the cases of tubercular peritonitis in the female the Fallopian tubes are almost always affected. Dr. Bristowe says that out of forty-eight cases there was tubercle in four in the uterus and Fallopian tubes, whilst Dr. Moxon believed that the disease originated in the serous membrane and spread thence into the tubes. It is evident that, at the London and St. Thomas's Hospitals, either the condition of the uterine organ has been imperfectly recorded, or that the frequency with which the disease originates in the Fallopian tubes has been exaggerated by other observers.

In all probability the ordinary predisposing causes of tubercle tend to the production of the affection of the peritoneum; but in a number of cases, especially in those of an acute character, there is no history of any family predisposition to the complaint. Females seem to be less liable to it than the other sex, for of forty-six of our adult cases only sixteen were females. As regards age, the greatest liability was between fourteen and twenty; twelve cases having been recorded in this period; nine were between twenty and thirty; ten between thirty and forty; ten between forty and fifty; four between fifty and sixty; and none above that age. Amongst the females the largest number occurred between the age of fifteen and twenty, seven out of twelve being at this time of life; whilst there was only one between twenty and thirty, three between thirty and forty, and five above forty years of age.

In adults the symptoms and course of tubercular peritonitis greatly differ from what we are in the habit of observing in children. In the latter the disease usually runs a chronic course with a succession of acute or subacute attacks of peritonitis, there being often in the intervals a comparative freedom from any urgent symptoms; but in the adult it may present every variety, from sudden acute peritonitis to a slow and lingering malady, in which the manifestations of abdominal disease are either slight or are altogether wanting. It is this diversity in the symptoms and course of the disease that has led some writers to propose its division into several forms, each being described as presenting different features from the others. The objection to this is that, in practice, we constantly find cases that appear at first sight to belong to one group afterwards develop the symptoms of another, and it is this variation in the characters of the disease that constitutes one of the chief difficulties in its diagnosis. For instance, cases are described in our records that were acute up to a certain date, after which the urgent symptoms subsided; whilst in others a sudden development of acute peritonitis occurred in persons who had previously been suffering from a chronic form of the disease.

I think we shall get the best view of the disorder if we divide the cases according as they are of an acute or chronic character; the former being characterised by a sudden onset, high fever, and well-marked pain and tenderness of the abdomen; whilst the latter come on gradually, have a lower temperature, less marked abdominal symptoms, and run a more chronic course. Bearing in mind that this division is to a certain extent artificial, and that the cases in each may change their character during the course of the disease, let us try to ascertain from the facts at our disposal the course, symptoms, and duration of the cases in each of these groups.

1. Acute Tubercular Peritonitis.

There are seventeen cases of the acute form in which the state of the health of the patients previously to the first symptoms of the complaint are recorded. We are so much in the habit of supposing that the development of all tubercular disease is preceded by a deterioration of the general health, that you will be surprised to learn that seven out of the whole number stated that their health had been quite good previously to the illness, Amongst these the disease seems to have made less rapid progress than in those who had been formerly delicate, for, of the seven, only one died within one month of the appearance of the first symptoms, four within two months, and three lived beyond that period; whilst, amongst those previously delicate, four died within one month, three within two months, and only one survived beyond that time. It is therefore probable that the condition of the patient greatly influences his power of resisting the disease, and that the more healthy he had previously been the more likely is he to resist its inroads upon his strength.

Of those who had been out of health before the symptoms of peritonitis showed themselves, six had suffered from cough, some for a considerable period, two of these had also been affected with hæmoptysis, two had complained of pains of the chest or right side, four had been losing flesh and strength, one had suffered from pleurisy, and another from febrile symptoms which had been referred to typhoid. Three females had been affected with amenorrhœa for many months before the first outbreak of the abdominal symptoms. But although so many had previously suffered from cough, advanced phthisis was not found in any at the beginning of the case, so that acute tubercular peritonitis is not a common result of chronic pulmonary disease. As so large a proportion had been quite well up to the first appearance of the symptoms, we shall not be justified, in any doubtful case, in concluding

that it is not of a tubercular character merely because there is no history of previous ill health.

In this form of tubercular peritonitis the onset of the disease was generally sudden, and, unlike the slow commencement of typhoid, the patient was usually at once compelled to go to bed. In only one the disorder was ushered in with severe pains of the ankles, headache, and febrile symptoms similar to those of rheumatic fever, but these soon disappeared after his admission into the hospital.

In ten out of eighteen cases in which the primary symptoms are recorded, the chief complaint at first was of pain and tenderness in the abdomen. The pain varied greatly in amount. In only one the patient is described as lying with the legs raised, but in most of them it was severe from the first. In one instance it was limited to the epigastrium, and was increased after food—a condition that would render the malady easy to be confounded with gastric ulcer; in another the pain was entirely referred to the iliac region, and as there was also tenderness on pressure, there would be considerable chance of the pain being regarded as due to inflammation at or around the cæcum. Distension of the abdomen was nearly as common at the commencement of the illness as pain and tenderness, eight of the whole number having exhibited this condition. In some cases, however, that have come under my own notice, there has been neither pain, tenderness, nor distension at an early period of the illness. In most the bowels were at first constipated, but in several the complaint was ushered in with diarrhœa. It is, however, worthy of remark that the distension and diarrhœa occurred together in only two out of eighteen cases. Vomiting, more or less continuous, is recorded as an early symptom in four cases, and in only one vomiting and diarrhœa occurred together. Rigors or chills are mentioned only in one case.

The initial symptoms, then, in this form of the disease may be laid down as a sudden pain in the abdomen, not so severe as in ordinary peritonitis, but attended by tenderness on deep pressure, accompanied by constipation or

diarrhœa, and sometimes by occasional vomiting. In addition to this there are general feebleness, increased rapidity of the pulse, and an elevated temperature, but this rarely rises above 102° in the commencement of the attack.

During the progress of the case pain of the abdomen was the most prominent of the local symptoms; it varied, however, in different cases, both as to its severity and its position. In twelve out of eighteen, it was sufficiently pronounced to attract the attention both of the physician and of the patient, but in the remaining six it was so slight that it might have been easily overlooked. When it was severe it sometimes disappeared for days together, or varied in intensity during the illness. In a few instances it was referred to the whole abdomen; more generally it affected first one part and then another; in many cases it was limited to the right hypochondrium, or to the epigastrium, and when in this latter situation it was sometimes increased by food. In twelve cases there was marked tenderness, increased by deep pressure, but in only one the weight of the bedclothes was sufficient to produce suffering. Mostly the tenderness was local, and varied in intensity during the progress of the disease. In five there was marked tenderness, although pain apart from pressure or movement was not complained of. In two instances where there was continuous pain there was never any tenderness. There was, however, a complaint either of continuous pain or of tenderness in every case except in one, in which severe pain was the first symptom, but it soon disappeared, and did not return.

Vomiting was noted as frequent in only four, and in two others there was constant nausea, although vomiting did not occur. In three it is especially remarked that vomiting never showed itself. Diarrhœa was severe and continuous in twelve out of the eighteen; in the remainder it occurred only occasionally. In eight constipation is mentioned as alternating with diarrhœa, but, as a general rule, the bowels were relaxed towards the termination of each case.

In every instance the temperature was elevated, but it presented no typical course as in typhoid. Generally speaking, it varied from day to day, rising in the evening and falling in the morning, and in most the difference between the morning and evening temperature amounted to one or two degrees. In two cases it varied between 99° and 100°; in one between 100° and 101°; in five from 100° to 102°; in two between 100° and 103°; in four between 102° and 104°; and in two between 101° and 105°. In all the temperature was very irregular, and in one it fell below the normal shortly before death.

The pulse was generally quick from the first, but varied greatly in different cases; it was rarely of the normal frequency, and became more rapid as death approached.

Loss of flesh was a prominent symptom in all, and in many proceeded to an extreme degree. The appetite, with few exceptions, was defective from the commencement, and remained so until the end of the case. The tongue in every instance in which its condition is mentioned was "foul" or "furred," or "with red tip and edges;" in a few it became dry. Thirst was almost constantly present, and varied in severity with the rapidity of the disease.

Chest symptoms showed themselves in the majority of cases, but the abdominal symptoms usually remained the most prominent to the close of the case. Cough is mentioned as very distressing in seven, but the amount of expectoration was rarely profuse. When dyspnœa presented itself, it was mostly as the result of the pushing upwards of the diaphragm by the accumulation of gas or fluid in the abdomen, and not as the result of any pulmonary changes.

We may sum up the clinical characters of this form of tubercular peritonitis by saying that they consist of more or less acute pain of the abdomen, increased by pressure, accompanied by elevation of temperature of an irregular kind, the evening temperature being usually much higher than that of the morning, by increased rapidity of pulse, rapid loss of flesh and strength, thirst, loss of appetite,

and continuous diarrhœa, or by diarrhœa alternating with constipation.

The cases of acute tubercular peritonitis may be divided into two groups. In one the febrile symptoms are the more prominent, and those relating to the abdomen are comparatively slight; such cases closely simulate typhoid fever. In the other the abdominal symptoms are the most marked, and the fever is moderate; such cases resemble ordinary peritonitis.

The physical signs varied in different cases, and also at different periods of the same case. In seventeen out of the eighteen the abdomen is stated to have been much distended; this was in most present from the first, but increased as the disease progressed. In six there was more or less fluctuation to be observed, but it was, as a rule, only in the earlier stages that fluid could be distinctly made out, and it was gradually absorbed before death. In the slighter cases of effusion the percussion note was dull only in the hypogastrium and in the flanks, and clear in the rest of the abdomen; but when the fluid was retained by adhesions, the dull parts were intermixed with others that afforded a tympanitic note. In most instances, as the fluid was absorbed the dulness disappeared, and the distended abdomen became everywhere tympanitic on percussion.

In three cases tumours could be detected in the abdomen, and in two of them the hardness felt on palpation was proved by post-mortem examination to have been the result of induration of the omentum. In the third they were caused by enlargement of the mesenteric glands, were movable by pressure, and varied in the place they occupied, probably in accordance with the variation in the amount of distension of the intestines. This case is sufficiently interesting to be recorded, as it is the only one in the whole series in which abdominal tumours were observed during life originating from such a cause.

Case 1.—A man was admitted into my wards on October 29th, 1885. He had always enjoyed good health, and there was no history of phthisis in his family. He had been an engineer in a ship, and fourteen weeks

before his illness he had suffered from slight diarrhœa and some pain of the abdomen. Nine weeks previously he had been laid up with what was looked upon as "typhoid fever," and on his recovery from it the medical officer of the ship detected some lumps in the abdomen.

When admitted, the abdomen was found to be tense, but he complained of no pain in it. It was tympanitic on percussion, and some hard, solid tumours, the size of a hen's egg, could be distinguished. There was dulness over the cæcum. The appetite was good; the tongue furred; no nausea or vomiting. The liver was normal in size, but the splenic dulness was somewhat increased. There was some diarrhœa; the chest seemed to be normal, as ascertained by percussion and auscultation.

November 6th.—Abdomen much swollen; no dulness below clavicles, but slight comparative dulness in the right supra-spinous fossa, with diminished respiratory murmur and sonorous rhonchi.

9th.—No pain of abdomen; no enlarged glands of groin; tongue furred; temperature 100°; pulse 120; urine normal.

19th.—Sonorous rhonchi at the bases of both lungs, also flatness over the sternal end of the right clavicle and over the right supra-spinous fossa. No tumours to be felt to-day, but some fluid can be proved to be present in the abdomen; no tenderness on pressure.

December 14th.—Abdomen still swollen, with indistinct nodules in it, chiefly to be felt in the umbilical region; the dulness of the abdomen shifts with the position of the patient; some tenderness now in the right side of the abdomen; diarrhœa ceased; no night sweats.

21st.—Dulness and crepitation at base of right lung; pain now on pressure over the left side of the abdomen.

The temperature, which had been previously a little above 101°, rose to 105° shortly before death; the diarrhœa persisted to the end.

At the post-mortem examination the peritoneum was found to be studded with tubercles and some opaque nodules. There was great enlargement of the mesenteric and retro-peritoneal glands, forming caseous masses; a few ulcers were present in the ascending colon.

The stools varied greatly in character in different cases, but some are recorded as being like pea-soup, and resembling the stools of typhoid fever. In one instance the typhoid-looking stools were accompanied by an eruption of rose-coloured spots on the abdomen that disappeared on pressure, although post-mortem examination proved the absence of the characteristic ulcerations of enteric fever.

It will be remarked that in the previous case constant attention was directed to the lungs, and it is generally supposed that the condition of the pulmonary organs affords us a key to the nature of the peritoneal inflammation.

It is true that, as a general rule, disease in the lungs or pleuræ is usually found on post-mortem examination, but the foregoing case shows that in the earlier stages there may not be sufficient physical signs upon which we can rely, and it is often only towards the termination of a case that we obtain trustworthy evidence of the existence of phthisis. Of the eighteen cases, two never presented any physical signs of pulmonary disease ; in eleven there were at some period of the case physical signs, such as comparative dulness on percussion and crepitations ; and in four the signs were only suspicious of tubercles, consisting of sonorous rhonchi or increased expiration in the upper parts of the lungs. In four the pleura was inflamed, and there was abundant exudation, the signs of which were readily detected during life.

From the above figures it is evident that although we may expect to meet with some physical signs directing our attention to the pulmonary organs, yet in a large proportion of the cases of acute tubercular peritonitis they will not be of so decided a character as to justify our relying upon them for the purposes of diagnosis.

Cases of this form of tubercular peritonitis usually end by death in about six weeks from the commencement of the symptoms ; thus, of the eighteen, six died within one month, eight between one and two months, and only four survived beyond the eight weeks. The more prolonged cases were like that noted in Case 1, where the acute attack subsided for a time, and was replaced by less urgent symptoms. I think there can be no doubt that what was said in that instance to have been an attack of typhoid was in reality acute tubercular peritonitis, for the tumours were discovered in the abdomen shortly after the cessation of the fever, and there was no post-mortem evidence that the patient had ever suffered from ulceration of the small intestines.

You would naturally expect that in the very rapid cases the fever would be high and the symptoms of peritoneal inflammation well defined, and no doubt such is usually

the case. But I have seen cases in which the fever was moderate, the abdominal symptoms not very prominent, and yet the patient sank rapidly, as in the following instance :

Case 2.—A woman, aged about thirty, was admitted under my care complaining of pains of the limbs, loss of appetite, thirst, and other febrile symptoms. There was some distension of the abdomen. She also suffered pain near the umbilicus, and there was some, but not much, tenderness on pressure. The temperature was about 102°. The disease had come on suddenly, and as there was an unusual amount of typhoid fever at the time she was admitted, I diagnosed the case as one of mild enteric fever. At first she seemed to improve ; the pains of the abdomen and the tenderness disappeared and the temperature fell, although not to the normal point. An exacerbation of all the symptoms occurred rather suddenly, and at the end of three weeks she sank from exhaustion.

On post-mortem examination no ulceration of the small intestines could be discovered, but there were the ordinary appearances of acute tubercular peritonitis.

The error in the above case was very excusable ; for whilst the prevalence of typhoid led us to look for it in every obscure case of fever, the comparatively small amount of pain and tenderness and the absence of well-marked physical signs in the chest seemed to forbid the idea of a tubercular affection of the peritoneum.

But other symptoms, such as spots on the abdomen and diarrhœa, may render the similarity of this form of peritonitis to enteric fever still more complete, and as an illustration I have appended the following case :

Case 3.—A young woman, aged seventeen, was admitted into my wards on March 13th. There was no history of phthisis, and she had, previously to this illness, enjoyed excellent health. Three weeks before her admission she had been attacked with diarrhœa, headache, general weakness, and loss of appetite.

When admitted, she complained of pain and distension of the abdomen. She lay upon her back, had vomiting about once in the twenty-four hours, and the diarrhœa was excessive. Temperature 100°. The next report mentions that the abdomen was still distended and tympanitic ; it was tender on the right side, and *there were well-marked spots like those of typhoid* scattered over the abdomen ; there were also some crepitations at the base of the right lung. In a few days the temperature had risen to 104°, and she complained of pain and tenderness of the left iliac fossa.

March 21st.—Pain of the abdomen preventing sleep; abdomen still tympanitic.

24th.—Vomiting daily, and pain still complained of.

26th.—Vomiting ceased, and also the diarrhœa; bowels now confined. The temperature had fallen to 100°.

29th.—Some slight dulness, as compared with the opposite side, was remarked at the left apex; slight crepitation and increased vocal fremitus.

April 1st.—The diarrhœa had returned, but the temperature was now normal.

9th.—Patient much improved; pain in the abdomen quite gone, but the chest symptoms were rather more marked.

11th.—Stools now solid; pain in the abdomen had returned, and temperature had risen to 102°.

28th.—Some dulness now below left clavicle, and harsh inspiration; respiration feeble posteriorly; abdomen distended, but no pain.

May 11th.—Vomiting returned; bowels now constipated.

17th.—Was suddenly seized with great pain of abdomen and vomiting; temperature normal.

23rd.—Diarrhœa very severe; pulse 140.

25th.—Purpuric spots showed themselves on the chest. She was very feeble, had great difficulty in swallowing, and sank on May 29th.

At the post-mortem examination, the peritoneum was found to be thickened and studded with tubercles, the intestines were adherent, and the capsules of the liver and spleen thickened; there was an ulceration in the cæcum; a few tubercles were found at the left apex, but none in the right lung.

In the foregoing case you will remark that at the outset the pain and tenderness of the abdomen were but slight, whilst the elevated temperature, the rose-coloured spots, and the severe diarrhœa all pointed to typhoid. As the case proceeded, the similarity to enteric fever became less marked, the pain and tenderness of the abdomen increased, vomiting was more frequent, and the temperature at first diminished and afterwards became normal. The chest was examined from day to day for indications of tubercular disease, but, as you will remember, the physical signs were not clear, and only pointed to some mischief at the left apex.

In both of the above cases the more acute symptoms declined as time went on, and, as there was no great amount of pulmonary mischief detected after death, you

will naturally ask whether such cases are not susceptible of cure; whether the peritoneal inflammation may not subside after adhesions have taken place, and the patient regain his former health. Unfortunately, I cannot call to mind any case of acute tubercular peritonitis in the adult that has ended in recovery, and I suspect the reason to be that the affection of the peritoneum is but a part of a general malady that so lessens the vitality of the patient that death is the necessary result. In acute tubercular peritonitis, as in cases of acute general tuberculosis, in which the peritoneum is not specially involved, it would appear that death results not so much from the effects of an inflammatory action set up by the tubercles, as from an affection of the whole system by the bacteria, of which the tubercles are the result.

The diseases with which we are most apt to confound acute tubercular peritonitis are typhoid fever and acute non-tubercular peritonitis, and in some instances the resemblance is so close that it is only by great care and watchfulness that we can avoid falling into error.

As a general rule, tubercular peritonitis of this kind begins suddenly, whilst typhoid is usually preceded by a period in which the patient has been weak, feeble, and feverish. In the former, pain in the abdomen is more marked, and there is tenderness over different parts; whilst pain in the latter is rarely severe, and any tenderness that may be present is confined to the iliac region. In tubercular peritonitis the temperature rises at once, and not regularly, as in enteric fever, and the pulse is usually more rapid. As the case proceeds the temperature varies more in peritonitis, spots are rarely observed, and the stools have not generally the typical appearance of those passed in typhoid; whilst at a later period the persistence or frequent returns of abdominal pain and tenderness and of vomiting, the variations of the temperature, the alternations of constipation with diarrhœa, and the increasing prostration, will in most instances enable you to distinguish between these diseases. In addition to these differences,

you will in many cases be able to render your diagnosis more certain by the discovery of fluid in the peritoneum, or by the detection of a tumour in the abdomen ; or you may find the signs of effusion in the pleura or of consolidation in the apex of one or both lungs.

Still more difficult is it to distinguish between acute tubercular peritonitis and ordinary peritonitis when the former does not assume from the first the typhoid form. In many cases I believe it is impossible to arrive at a certain conclusion in the early stage, for both may attack persons previously healthy, both may be ushered in by similar abdominal symptoms, and it is only by watching the progress of the disease that you can form an accurate opinion. As a general rule, the pain, tenderness, and vomiting are less distressing in the tubercular form, the temperature is lower, and there is usually diarrhœa rather than constipation. As the disease progresses, the abdominal symptoms recur from time to time instead of slowly subsiding, the temperature remains high, emaciation becomes more marked, the effusion into the peritoneum is very slowly absorbed, and you may discover signs indicating effusion into the pleura or pulmonary consolidation.

As regards the treatment of acute tubercular peritonitis in the adult. In the typhoid form I have usually treated the case as if it were one of enteric fever ; that is, the patient has been kept at rest, the food has been restricted to liquids, and cold sponging has been employed whenever the temperature has been unduly high. Quinine in moderate doses in combination with opium has been prescribed to relieve pain and to check diarrhœa. In the cases in which the symptoms were chiefly abdominal the treatment has been directed as in ordinary peritonitis ; poultices and hot fomentations have been applied to the abdomen, and small doses of opium have been given to relieve pain and diarrhœa. You must, however, be careful not to induce constipation, for it is usually followed by attacks of vomiting that quickly reduce the strength of the patient.

You may ask whether the washing out of the peri-

toneum, which is so successful in some cases of suppurative peritonitis, is likely to prove beneficial in this kind of case. I have never seen it tried, chiefly because the real nature of the disease has more frequently been suspected than actually diagnosed during life; but I do not think it would be of much value, as I have found the fluid serous, not purulent, and the patients have seemed to me to sink from the general acute tuberculosis, and not from the effects of inflammation of the peritoneum.

II. Chronic Tubercular Peritonitis.

The chronic forms differ greatly from the acute, but they also present considerable variations in their symptoms and in the course they pursue. Various divisions have been proposed, so as to include these varieties, but most of them are unsatisfactory, and I think it will be found best to group them according to the nature of the exudation with which they are accompanied—that is, into the adhesive, the ascitic, and the suppurating forms.

In only ten cases the family history of the patients who were the subjects of the chronic forms of tubercular peritonitis is recorded; and of these, five had a history of phthisis in the family, and five were the children of parents who had been free from all tubercular disease. We again, therefore, encounter in the outset of our inquiries the same fact we before met with in the acute form—viz. that tubercular peritonitis often occurs in those who have no hereditary predisposition to tubercular complaints. On account of the great variety in the symptoms and course of the different forms of chronic tubercular peritonitis we must consider them separately, and I shall first direct your attention to that in which the tendency of the complaint is to terminate by adhesion of the peritoneal surfaces.

(*a*) *The Adhesive form of Chronic Tubercular Peritonitis.*

The male sex seems much more liable than the female to this form, for, of twenty-three cases collected by Bouillaud or recorded in our books, seventeen were men and only six were women. As regards age, females are more liable to it below twenty than males, for two out of six occurred at this period in females, and only one out of sixteen amongst males. This fact accords with my own observations, and may be useful in the diagnosis of doubtful cases in young persons.

The complaint may commence very insidiously, or it may begin with the symptoms of acute peritonitis; the former is the more common. In four out of seven of our cases the patient first complained of weakness and loss of flesh, along with cough and dyspnœa. This was followed by slight pain of the abdomen, with tenderness on deep pressure, but these symptoms were often so slight as to be easily overlooked. Generally the patient at first suffered more from distension after food and other signs of dyspepsia than from any positive pain, and there was loss of appetite, with constipation, sometimes alternating with attacks of diarrhœa. The temperature was generally slightly raised towards evening, but at this period it rarely rose above 100°, sinking to the normal point in the morning.

It is not to be wondered at if in most of these cases the patient is supposed to be suffering only from dyspepsia, and it is not until a decided loss of flesh and strength or marked febrile symptoms show themselves that the suspicions of the medical attendant are aroused as to the more serious nature of the complaint.

It now and then happens that the disease runs its course without any more definite symptoms than those above mentioned. Of this there are three examples in our records, in all of which, although the usual evidence of chronic tubercular peritonitis was discovered after death, no mention is made in the histories of any symptoms point-

ing to this condition. In one the patient died ·ic
disease of the hip-joint, and no complaint of ı ıe
abdomen is recorded during the whole of his i in
a second there was a history of old syphilis, and t ıt
succumbed to an attack of sloughing of the f e
only abdominal complication being intractable ı.
In the third there had been wasting and diarrl g
with doubtful physical signs of tubercular phi t
there was no record of any pain of the abdomeı r
signs pointing to the peritoneum. In all of these t ,
however, an elevation of the temperature towards ,
but this might easily have been referred to the oi -
plaints from which the patients were suffering. I have seen cases in which the absence of pain and tenderness of the abdomen was most puzzling, and I would therefore impress upon you the necessity of always most carefully examining the abdomen in any case in which you have obstinate diarrhœa, or where, without any diarrhœa, there is an evening rise of temperature for which you are unable to account.

In two of the cases commencing with symptoms of peritonitis, the disease was ushered in by rigors, severe pain of the abdomen, and vomiting. This method of invasion was rare, usually a fixed pain in the abdomen, along with some distension, being the earliest symptom. The pain was seldom severe, was mostly located about the umbilicus or in the right hypochondrium, was increased by movement, often after eating or an action of the bowels, and was relieved by the recumbent position. It was almost always attended by loss of appetite, thirst towards evening, flatulence, and constipation, alternating with diarrhœa.

But cases occur which are most puzzling, and which may easily lead to serious errors in diagnosis. I refer to those in which the disease commences in the pelvis, and where for some length of time the morbid action is limited to the organs contained therein. The subjects of this form are usually young females who have suffered for some time from amenorrhœa. They complain of a fixed pain

in the hypogastrium, aggravated by exercise or after an evacuation of the bladder or bowels. The pain varies in intensity from day to day, and is often only relieved by resting on the back. The patient slowly loses flesh and strength, and the temperature, at first normal, shows a tendency to rise towards the evening. There is no distension or tenderness of the abdomen, but the uterus can be sometimes felt, even at an early period, to be fixed by the adhesive inflammation set up by tubercular mischief in the Fallopian tubes or ovaries. When I was a young practitioner a case of this kind came under my notice that I mistook for hysteria, and its fatal termination made a lasting impression on my mind, and has acted as a warning to me ever since.

Case 4.—A young lady, about twenty years of age, consulted me on account of an occasional pain she experienced in the hypogastrium, but the exact seat of which she was scarcely able to define. The pain was not very severe, and there were no symptoms indicating any derangement of the digestion. There had been no marked loss of flesh, there were no physical signs pointing to mischief in the lungs, and I therefore concluded the disease was of an hysterical character, and would soon disappear under appropriate treatment. In this, however, I was disappointed; the pain persisted, coming on occasionally each day, not lasting more than a short time, but still sufficiently severe to cause the patient to complain of it.

She removed to a distant part of the country, in no way improved, and I heard no more of her for twelve months. At the end of that time I was requested to visit her at her home, and I found her extremely emaciated. Both lungs presented evidence of tubercular consolidation, whilst the abdomen was large and distended, apparently from general adhesion of the viscera. She stated that after she had returned home the pain had gradually increased, and instead of being confined to the hypogastrium it had become diffused over the whole abdomen; diarrhœa had set in, along with cough and expectoration; and when I saw her there was no doubt she was sinking from tubercular affection of the lungs and peritoneum.

In whatever way the morbid action may commence, sooner or later attacks of local peritonitis make their appearance, affecting in turn different portions of the abdomen. Pain may come on suddenly and be very severe, and be attended with well-marked tenderness and vomiting,

or it may be a less prominent symptom. It often varies in intensity from day to day, and after a time gradually subsides or makes its appearance in some other part of the abdomen. The tongue is usually foul, with a red tip and edges, the patient complains of thirst, the appetite is very bad, and the bowels are either constipated or affected with diarrhœa. Night sweats often present themselves, and the patient rapidly loses flesh and strength. The pulse is quick, and the temperature elevated towards night, but in all our recorded cases it seldom ranged above 102°.

The acute symptoms often for a time subside, and the patient is flattered by the signs of both local and general improvement, until a fresh attack again dashes his hopes to the ground. After repeated relapses, or after a more continuous but less acute affection, the emaciation and feebleness become more pronounced, the appetite fails, obstinate diarrhœa sets in, the temperature rises higher at nights than before, and does not fall to the normal point in the morning, the pulse becomes smaller and more rapid, and the patient gradually sinks from exhaustion. In some of our cases delirium closed the final struggle, but more generally the intellect remained unaffected to the last.

I have described the death of the patient as resulting from a succession of attacks of subacute peritonitis, but this is not always the case, for we see the abdominal symptoms sometimes entirely subside, and death result from a tubercular affection of the lungs or of some other organ. This course of the complaint has seemed to some authors so important in its clinical aspects that they have described it as constituting a distinct form of the disease. A well-marked instance of it occurred a short time since in my wards, which it may be worth while to recall.

Case 5.—A man was admitted who had been attacked with rigors followed by the usual symptoms of pneumonia, and accompanied by the physical characters of that disease. The temperature did not fall at the usual time, the cough and expectoration persisted, and after some weeks

it was evident that the consolidation revealed by the physical signs must be of a tubercular character.

On the twenty-sixth day he was suddenly attacked with the symptoms of a subacute form of peritoneal inflammation, which persisted for some weeks and then gradually subsided. The pulmonary indications again became prominent, and he died with the ordinary symptoms of phthisis.

On post-mortem examination the peritoneum was found to be greatly thickened with lymph and tubercle, the intestines being generally bound together by adhesions, whilst there was a tubercular cavity in the apex of the right lung.

In this, then, we had first an attack of tubercular pneumonia, the symptoms of which for a time subsided and were replaced by those of peritonitis, which again gave way to those arising from the original affection of the lung. I have met with cases of this kind more frequently in private than in hospital practice, and the peritoneal inflammation may be easily overlooked. In forming your diagnosis you must never, however, trust to the mere complaint of pain and tenderness of the abdomen, but must take care that there are also well-marked physical signs before you decide as to the nature of the case.

Case 6.—A few months ago foreign sailor was admitted into my wards who was unable to speak a word of English. He was supposed to be suffering from typhoid fever, had a permanently elevated temperature and diarrhœa and a somewhat enlarged spleen, but no cough or expectoration. He pointed to the right side of the abdomen as the seat of his suffering, and complained when pressure was made on this part.

In a short time we found slight comparative dulness and a little crepitation at the apex of one lung, and the range of temperature was observed to differ from that of typhoid. It was therefore diagnosed as a case of acute tuberculosis, and from the persistence of the pain and tenderness of the abdomen I concluded there was tubercular peritonitis, although there were no distinct physical signs of that condition. The examination after death, however, revealed no evidence of peritonitis, but at the site of the pain and tenderness there was a large tubercular ulceration of the colon.

Occasionally death occurs from other causes. Thus in one of the cases profuse hæmorrhage had taken place into the peritoneum ; but such instances are so rare they are scarcely worth much consideration.

As the symptoms are often indefinite and the course

variable and protracted, the physical signs connected with the disease are of the greatest value. At first the abdomen may be merely distended with flatus, and whenever this is observed in young persons the practitioner should be on his guard, for I have in different instances known the physician consulted, not on account of any pain, but simply from the inconvenience arising from the abdominal distension.

On percussion the note is generally tympanitic, or in the more severe cases there is, even in the earliest stage, a certain amount of dulness in the hypogastrium or in the flanks. The dulness does not necessarily vary with the position of the patient, for if adhesions be present it may keep its place, however the trunk is inclined ; or if they be only partial, the dulness may shift very slowly from side to side when the patient's position is reversed. As time goes on the dulness in most cases gradually disappears, and the distension lessens, or it may be replaced by a contracted condition arising from the adhesion of the viscera.

In many cases the abdomen gives to the hand a sensation as if the intestines were generally glued to the abdominal parietes, and the attenuated skin seems to slide over the subjacent parts. The veins are usually enlarged, but not to the same extent as in cirrhosis of the liver. In some cases the fluid is never completely absorbed, but being confined by adhesions, it presents a localised swelling that is dull on percussion, and whose boundaries do not vary with the position of the patient. Such cases are of great importance, as the tumour so formed may be readily confounded with that arising from ovarian disease.

We found that in the acute cases the omentum sometimes formed a tumour across the epigastrium, and the same may occur in the form of the disease we are now considering. Ordinarily it occupies the umbilical region, but it may be placed on one side of the abdomen, or be situated even in the hypogastrium. These omental tumours usually afford a dull note on deep, but a slightly tympanitic sound on

light, percussion. Yet even a light stroke elicits a note that is duller than the neighbouring parts.

I have seen elongated tumours that gave a dullish note on percussion, but which could be somewhat indented by the pressure of the finger, and varied in size from day to day, according to the state of the intestines. These seemed to consist of fæces, and were probably the result of an imperfect action of the colon, arising from its contractions being enfeebled by adhesions. You would expect to find tumours originating from enlarged mesenteric glands, but these are rare, glandular tumours of this nature being readily hidden by the distended coils of the intestines in front of them.

When speaking of the morbid anatomy of tubercular peritonitis, I drew your attention to the fact that in the majority of cases the lungs were found to be affected with tubercle after death. It is therefore an important question how far we can count upon the presence of the physical signs indicating pulmonary disease as an assistance in the diagnosis of a doubtful case of chronic tubercular peritonitis. In all the seven cases of adhesive tubercular peritonitis there were signs during life of an affection of the lungs or pleura; in five the physical signs of consolidation at the apex of the lung were distinct; in one there were indications of pleuritic effusion, but none of pulmonary tubercles, although some scattered nodules were found after death; and in the other there were signs of pleurisy, the results of which were found on post-mortem examination, although no tubercles could be discovered in the lungs. But it should be mentioned that the physical signs were only marked towards the close of life, so that we cannot rely upon always finding them during the earlier periods of the disease. Judging from my own experience, I should say pleurisy with effusion, but without much pain or elevation of temperature, is the most common complication of this form of the malady.

It is difficult to fix the exact duration of the fatal cases on account of the insidious manner in which many of them

commenced. Of seven whose histories are carefully recorded, one died between four and five months, one within six months, one within seven months, two within twelve months, one had been ill eighteen months, and in one case it was doubtful when the first abdominal symptoms showed themselves, but he had been out of health for at least twelve months.

But it may be asked whether, instead of terminating in death, this form of tubercular inflammation may not be susceptible of cure. In an ordinary case of inflammation of a serous membrane nature removes the ill effects of the morbid action by the absorption of the effused liquid and the formation of adhesions; is it not possible, then, that a similar fortunate termination may occur in peritonitis excited by the presence of tubercles? I think we have every reason to believe this not infrequently occurs in the form of the disease we are now considering.

In our records different instances are mentioned in which all morbid action in the peritoneum had apparently ceased, and in which, along with general adhesions, there were calcareous deposits which could only be attributed to the degeneration of old tubercular matter. A well-marked case of this occurred in my wards not long since, the patient having died of an acute disorder, when apparently in perfect health, but in whom, on post-mortem examination, the meso-colon was found to be greatly thickened and studded over with calcareous deposits.

We every now and then see persons in whom tubercular peritonitis has been diagnosed, apparently on safe grounds, who nevertheless recover their health. An instance of this occurred in a young man who occasionally still attends the wards in order that we may watch how he is going on. Eighteen months before he was admitted under me he was in the hospital, and was believed to be suffering from chronic tubercular peritonitis. He recovered and came under my care on account of pleurisy with effusion. On examination a tumour of considerable size could be detected in the abdomen, but he gradually recovered from the pleurisy,

although the tumour remained and can still be readily felt.

But the best evidence we possess of the cure of tubercular peritonitis is derived from operations in which the abdominal cavity has been opened. The earliest case of this kind is recorded by Sir Spencer Wells, who many years ago opened the abdomen in a case that was supposed to be one of ovarian disease, but which proved to be one of tubercular peritonitis. The lady recovered not only from the effects of the operation, but from the disease itself, and was in perfect health many years afterwards. A similar case occurred in this hospital within the last two years, in which the patient was operated upon by Dr. Herman and recovered; and other instances of the same kind have been recorded from time to time.

After such evidence there can be no doubt that this form of tubercular peritonitis is susceptible of perfect recovery, but we have scarcely sufficient facts to enable us to determine how often this fortunate termination takes place. One foreign writer quotes a large number of cases in which he believes the inflammation subsided and the patient was restored to health; but as there were no post-mortem examinations to confirm the accuracy of the diagnosis, we ought to receive such reports with caution. My own experience favours the belief that the peritonitis not unfrequently subsides, but in most of these cases the patient is subsequently cut off by a tuberculous affection of the lungs or pleuræ.

It will be necessary for us now to consider the difficulties of diagnosis, and you will find these vary according as the case presents distension without much fluid, or a localised collection of fluid bounded by adhesions.

You may suspect the existence of chronic tubercular peritonitis of this form when a young person complains of persistent pain fixed in some part of the abdomen, aggravated by motion or by the action of the bowels, increased by pressure, and accompanied by marked distension of the abdomen, elevation of temperature, thirst, loss of flesh,

and derangement of the digestive process. But sometimes young females suffering from amenorrhœa alone exhibit very similar symptoms, and, as tubercular peritonitis is not unfrequently preceded by cessation of the menstruation, you may experience considerable difficulty in the diagnosis.

In tubercular peritonitis, however, you rarely have any well-marked anæmia to account for the amenorrhœa, and in many cases the lips and cheeks are florid instead of being pale. The pain is usually aggravated by motion, such as walking or driving, is relieved by rest, and is often at first confined to the pelvis. As time goes on, the pain does not remain located in the epigastrium or left side, as is the case in anæmia ; but it may shift from place to place, and it is more apt to be aggravated by an action of the bowels than by food. Then, again, the loss of flesh and strength is more rapid, there is usually thirst towards evening, and the temperature, although it may be normal in the morning, usually begins to rise in the afternoon. The abdomen may be swollen in both disorders, but it is more tense in tubercular peritonitis, and the pain is more increased by deep than by superficial pressure ; whilst you may discover by palpation the existence of fluid or a tumour, or some morbid change in the pelvic organs. Cough, expectoration, and night sweats point to the tubercular affection, and in many cases you may find the physical signs of pleurisy or perhaps a little comparative dulness with crepitation at the apex.

The mistakes that have been made by so many eminent practitioners between this form of peritonitis and ovarian tumours are a sufficient proof of the difficulty of the diagnosis ; indeed, in many cases an exploratory opening is the only means by which we can arrive at a certain conclusion. You may, however, suspect that an elastic abdominal tumour, dull on percussion, will be of this nature, if you have a history of previous pain, distension, and tenderness of the abdomen, accompanied by febrile symptoms, and if the tumour has occupied the same position from the first.

Your opinion would be strengthened if the swelling were painful and tender, if its boundaries were irregular, if there was an elevation of temperature and rapid loss of flesh and strength, or if you could discover another solid or elastic tumour in a region not usually occupied by an enlarged ovary. Of course you would carefully explore the chest, and any indications of tubercle in the lungs or of pleurisy would throw considerable weight into the scale in favour of tubercular peritonitis.

But another question will naturally suggest itself to you. Supposing that a case is clearly made out to be one of chronic general peritonitis, is it necessarily of tubercular origin? It used to be held by some pathologists that all cases of chronic peritonitis were of this nature, but this is clearly incorrect. Excluding cases of local peritonitis, we have twenty-three cases of chronic peritonitis recorded in our books in which no tubercle was discovered, during the same period in which the forty-seven cases of tubercular peritonitis are registered. The non-tubercular cases are therefore nearly half as common in adult life as those which owe their origin to tubercular disease.

Of the above non-tubercular cases, seven were associated with cirrhosis of the liver, and in all there was an enlarged spleen and ascites, whilst in four there was also exudation into the pleura. In five there was chronic disease of the kidneys, accompanied by enlarged heart in three, in four associated with thickened capsule of the liver, and in two with effusion into or thickening of the pleura. In only two instances the chronic peritonitis seemed to have originated from local causes, and in two others there was disease of the heart but in each of these the capsule of the liver was greatly thickened. Amongst the females, abscess in the pelvis seemed chiefly to have set up the inflammatory process, five of the cases being associated with it.

We have therefore three conditions that seem to be the chief causes of chronic non-tubercular peritonitis—viz. cirrhosis of the liver, chronic diseases of the kidneys,

and pelvic abscess, and if you can exclude these you will be justified in looking upon any well-marked case of chronic general peritonitis as of tubercular origin. It is further worthy of special notice that tubercular disease of the lungs was absent in all these non-tubercular cases, except in one, in which the peritonitis seemed to have originated from a local cause. On the other hand, many of them were associated with effusion into the pleura, and it will be well to remember this fact, as some practitioners have spoken of the occurrence of pleurisy as of the highest value in the diagnosis of tubercular peritonitis. The above figures, however, show that it often occurs in non-tubercular cases, and I have myself been led into errors of diagnosis by trusting too much to this condition in cases of chronic inflammation of the peritoneum.

As regards the treatment of tubercular peritonitis, you must bear in mind that you have to deal not merely with an attack of inflammation, but that it is the result of a bacterial infection, and that therefore whatever tends to depress the vital powers must be avoided.

When you have the opportunity, choose a climate likely to invigorate the patient, and, if the season of the year be favorable, select a residence near the sea. Whenever the pain becomes severe, or there is much elevation of temperature, insist upon the recumbent position, but if the patient is not suffering much pain a limited amount of exercise in the open air may be recommended. The diet should be digestible and nutritious. Stimulants are rarely necessary excepting in the later stages of the disease. During the attacks of fever you had better restrict the patient to food composed of milk, farinaceous substances, and animal broths: but when improvement takes place, chicken, fish, or pounded meat may be substituted, and, if he is capable of digesting it, cod-liver oil may be given.

As regards medicines, the main indications for treatment are to relieve pain and improve the general health. When there is much pain and fever, I generally prefer the compound ipecacuanha powder to any other form of sedative,

but if this does not afford relief you may prescribe opium in any other form. Hot fomentations, poultices, and in the more chronic cases small blisters or the external application of iodine, are of value; but I rarely order leeches, as the amount of relief obtained by their use is more than compensated for by the loss of strength that follows their application. When the attacks are subsiding, cinchona, quinine, or some mineral acid is often valuable, but I have rarely found benefit from the use of iron.

I think there is no doubt that any collection of fluid that does not seem likely to be absorbed should be evacuated. Most of the operations hitherto recorded have been followed by a sharp attack of peritonitis, but this has usually subsided and the patients have recovered. But you will naturally say—If the operation has succeeded in some, why may not this method of treatment be adopted in all cases of chronic tubercular peritonitis of the adhesive form? I think our present experience is not enough to justify us in coming to a conclusion on this point, especially when we remember that so many recover, at any rate for a time, under medical treatment. If future experience, however, should show that the operation has not only a beneficial effect on the peritoneum, but tends also to prevent the extension of the bacterial elements to the lungs and other organs, then there is no doubt surgical treatment should be employed in all cases of the disease.

(*b*) *The Ascitic form of Chronic Tubercular Peritonitis.*

The fluid at first effused in chronic tubercular peritonitis is usually gradually absorbed, excepting where it remains enclosed by adhesions; but you will remember that, when speaking of the morbid anatomy of the disease, it was mentioned that occasionally a large quantity of serum remains permanently in the abdominal cavity. These ascitic cases were found to be connected either with great thickening of the peritoneum or with cirrhosis of the

liver, and as the clinical history of these two forms greatly differs, it will be necessary to consider them separately.

The following case extracted from our records is a good illustration of the first of these conditions.

Case 7.—A woman, aged forty-two, was admitted into the hospital on account of ascites. Two years previously she had begun to lose flesh, and six months before her admission she first observed swelling of the abdomen and loss of appetite. These were followed by pain of the abdomen, which had greatly increased five weeks before she applied at the hospital.

On admission she was found to be much wasted. The abdomen projected like that of a person advanced in pregnancy. It was distended two or three inches above the lower border of the sternum, but was more prominent on the right than on the left side. The front of the abdomen was everywhere dull on percussion, but the left loin behind was more tympanitic than the opposite one. The specific gravity of the urine was 1024; it was not albuminous. The apex of the right lung was somewhat dull on percussion; the inspiration was harsh and the expiration prolonged. The patient was tapped next day, and 322 ounces of watery fluid were removed. After the tapping, a line running across the abdomen, about one inch broad and one inch above the umbilicus, hard and movable, suggested the idea of the omentum being coiled up into a roll; below this the abdomen felt soft. The fluid rapidly collected after the tapping, and the patient died in about two weeks.

At the *post-mortem examination* a large quantity of fluid was found in the abdomen, and the intestines were collected together in the middle of the abdominal cavity, the coils being consolidated by greatly thickened peritoneum. The small omentum and the peritoneum covering the stomach were converted into a firm, tough, fibroid substance, and there were tubercles scattered over the whole surface of the peritoneum. There was an ulcer near the great curvature of the stomach, but the condition of the lungs is not mentioned.

Cases of this kind are apt to be exceedingly puzzling, and are easily confounded with ascites arising from other causes. When, however, you can obtain a good history, you will generally find, as in the above instance, that the general health had been failing, and that the abdomen had been painful and tender for some time before there was any well-marked swelling, and where the patient has been under your observation you will probably observe a daily rise of temperature towards the evenings. The swelling of the abdomen is often not symmetrical, one part

bulging more than another, and the tympanitic note that marks the site of the colon floating in the fluid, which is present in ordinary ascites, is usually wanting in this condition, as the colon is often tied down by adhesions or covered by the thickened peritoneum. One loin, as in the above case, may be unusually tympanitic on account of the intestines being bound down more on one side than the other.

You will remark that the thickened peritoneum was discovered in the shape of a tumour after tapping, and in all cases it should be searched for after the evacuation of the fluid. Unfortunately, in the case just quoted the condition of the right lung after death is not recorded, although from the nature of the physical signs observed during life there can be little doubt it was diseased. If in a doubtful case a tubercular affection of the lung could be determined, or if the physical signs of pleuritic effusion were found, it would go far to settle the diagnosis in favour of chronic tubercular peritonitis.

The second variety of the ascitic form of tubercular peritonitis is where it is associated with cirrhosis of the liver. You will remember that when discussing the pathology of the disease it was mentioned that these two conditions were occasionally met with in the same case, and that in all probability the hepatic affection preceded that of the serous membrane. This seems to be confirmed by the history of the cases recorded in our books, for in each the symptoms of cirrhosis first made their appearance. In two there had been hæmatemesis two or three years before the commencement of the fatal illness, in another there had been an attack of severe epistaxis, and in all there were well-marked symptoms of declining health previous to the appearance of the ascites.

The cases were all admitted into the hospital on account of ascites, attended by loss of flesh and strength, and no mention is made in any of the records that tubercular peritonitis was suspected. In one instance severe pain of the hypochondrium attracted notice, in another abdominal pain,

which was acute enough to force the patient to lie with his knees raised, whilst in a third symptoms of peritonitis only showed themselves after the abdomen had been tapped. Along with the ascites the veins on the front of the abdomen were enlarged, and in two of the cases a hard tumour was discovered in the umbilical region. The pulse was quickened in all, and in all the temperature rose to 101° or 102° in the evenings, sinking to 99° in the mornings. All of them after death presented tubercular changes in the lungs, although there is no record, excepting in one case, of physical signs during life indicating this condition.

Let us now ask what are the circumstances that should induce us to suspect a case of ascites arising from cirrhosis of the liver to be connected with tubercular peritonitis. Let me, then, remind you, in the first place, that we before found that this form of the disease was rarely met with excepting between twenty and thirty years of age. If, then, you found a young man affected with ascites resulting from habits of intemperance, who was attacked with severe pain and tenderness of the abdomen, vomiting, and constipation, with a rise of temperature and quickness of the pulse, you might suspect this complication. But if there was a well-marked family history of phthisis, or if you discovered the physical signs of phthisis or of pleurisy, your suspicions would be greatly strengthened. If in addition to these you found a movable tumour in the abdomen, and you could exclude cancer, your diagnosis of this form of tubercular peritonitis would be tolerably certain.

As to the difficulties of diagnosis.

One of our cases is mentioned as having been diagnosed as suffering from emphysema of the lungs with enlarged liver. This mistake would be unlikely to occur excepting in the very early stages, and the history of intemperance, with perhaps epistaxis or hæmatemesis, the occurrence of ascites before œdema of the legs, the enlargement of the veins of the abdomen, and the physical signs of the chest

affection would enable you to distinguish between these complaints.

But when, as in those mentioned in our records, there was a distinct tumour to be felt, it would be most difficult to distinguish such cases from those of cancer of the peritoneum. The chief points on which to ground a diagnosis should be that the tubercular affection occurs chiefly in young men, carcinoma in middle or old age in either sex; the history of intemperance would point to cirrhosis, the elevation of the temperature to tubercular peritonitis, the probabilities of which would be further strengthened by the absence of the cachectic appearance of cancer and by the accompaniment of the physical signs of tubercular consolidation of the lung.

There is little to be said about the treatment excepting that tapping should be avoided as long as possible, as it is apt in such cases to set up acute peritonitis, whilst the exhibition of mercury and other remedies that experience proves to be so useful in the ascites arising from cirrhosis should not be allowed.

(c) *Chronic Suppurative Tubercular Peritonitis.*

This form of the disease is much more rarely met with in adults than in children; in fact, I can only find three cases in our books, if we exclude those in which there was also intestinal perforation, which in all probability set up the suppuration. Dr. Bouillaud, who has written an excellent paper on Tuberculosis of the Peritoneum and Pleura in the Adult, quotes four cases from various authors, exclusive of those in which perforation existed. Of these seven cases, three had enlarged tubercular glands in the abdomen; in one there were numerous deep ulcerations of the intestines, which had contracted the calibre of the canal in different places; and in two there were masses of tubercle in the omentum in a state of caseation or suppuration; in

the remaining case the state of the abdominal organs is not mentioned. Now we can readily understand that a fragment, however minute, of any of these caseated or suppurating masses finding an entrance into the serous sac will set up the suppurative process, and I believe this is the explanation of cases that up to a certain point present only the ordinary features of chronic peritonitis, but which suddenly change their course and terminate in suppuration. In six of the seven cases inflammation of the pleura or tubercular consolidation of the lungs was discovered after death.

Looking at the histories of these cases, we find there was nothing at first to distinguish them from those of the chronic adhesive form, but that the symptoms became rather suddenly urgent. In most the pain was increased, although in one it is expressly stated that it never was severe; the tenderness was aggravated, the temperature rose to a greater height than before, frequent sweatings occurred, and the pulse became very small and frequent. Excessive and uncontrollable diarrhœa was a symptom that presented itself in most of them before death.

In the diagnosis of suppurative tubercular peritonitis you must bear in mind that in most of the cases there is advanced disease of the lungs or pleura, or enlargement of the mesenteric glands, or ulceration of the intestines. If, therefore, in an ordinary case of chronic tubercular peritonitis occurring in a person who had suffered severely from diarrhœa, or in whom there were well-marked physical signs of disease of the pulmonary organs, you should meet with a sudden aggravation of the abdominal symptoms, attended with increase of fever, a very variable temperature, and frequent sweatings, you would be justified in the diagnosis of suppurative peritonitis.

You will observe that I have insisted upon a history of the symptoms of chronic tubercular peritonitis, for non-tubercular suppurative peritonitis may be suddenly lighted up in a tubercular subject, as you saw a few weeks ago in the following case in my wards.

Case 8.—A boy, about fourteen or fifteen years of age, had been suddenly attacked with severe abdominal pain and constipation. When admitted into the hospital he had the usual symptoms of peritonitis; the upper part of the abdomen was tympanitic on percussion, but the hypogastrium was dull, and the dull line moved only slightly with a change of the patient's position. A catheter was passed and a little urine removed; but the dulness remained, and the finger passed into the rectum detected a somewhat elastic mass filling up the pelvis behind the bladder. There was no tenderness or fulness over the cæcum, and it was therefore diagnosed that the patient had peritonitis from some unknown cause, that the intestines were matted together in the pelvis, and were closely united by adhesions.

The boy said he had enjoyed good health before the sudden attack of pain, but it was discovered after his death that he had some time ago been under medical treatment for enlarged glands of the neck.

On post-mortem examination general suppurative peritonitis was discovered, with matting together of the intestines; but the mischief seemed to have been produced by the bursting of a suppurating mesenteric gland into the peritoneum; the glands of the mesentery were found to be generally enlarged, but there were no tubercles scattered over the peritoneum.

When we were discussing the subject of fæcal tumours, it was mentioned that many of these cases were of a tubercular character, but in these suppuration is set up by the tubercular material which is in the walls of the intestines or other neighbouring organs, and the pus is walled in by adhesions, thus forming a local abscess. As these cases were discussed at considerable length, it will be only necessary to refer to them on the present occasion.

LECTURE VIII.

CANCER OF THE PERITONEUM.

GENTLEMEN,—We have lately discussed the subject of tubercular peritonitis as it occurs in adults, I have now to draw your attention to another affection of the same serous membrane, viz. cancer. You will find that cases of this disease also vary greatly as regards the difficulty of diagnosis; in some the appearances are so evident that it cannot be overlooked, whilst in others it is only by great care and attention that you are able to arrive at a certain conclusion respecting the nature of the malady. It is true that your recognition of it does not enable you to remove it, but an accurate diagnosis will often lead you to avoid methods of treatment that would only add to the sufferings and lessen the duration of the life of the patient.

We before found that a tubercular state of the peritoneum may occur with or without inflammation, but we did not discuss the latter condition, as it is of no clinical importance, is not capable of being recognised during life, and exercises no influence on the issue of the case. Cancer of the peritoneum may also exist with or without inflammation, but the general condition of the patient is affected more by the malignant growths than by any inflammatory condition that may be excited by them, and consequently it will be necessary to examine all the cases in which disease was present, without regard to the presence or absence of the inflammatory process.

You would expect me to group the cases according to the microscopical structure of the tumours present in them, but this is unfortunately impossible, for many were re-

corded before the microscope was in general use, whilst the rapid changes of opinion and of the nomenclature that have occurred during the last few years, and the different views of the individuals by whom the histories have been written, effectually preclude any attempt to do so. This is, however, of less importance, as the ultimate result of all malignant tumours is the same, and modern science has afforded us no hope of benefit from any remedial measures except from an early extirpation of the new formations.

When any of the abdominal organs is attacked by cancer the peritoneum covering it may be also affected, but unless the disease should spread to other parts of the serous membrane it is of little practical importance, as the course and symptoms of the primary disorder are but little affected by it, but when the growths extend over a considerable portion of the peritoneum the case often assumes new features and the course of the disease may be materially modified. I have therefore in the following cases included only those in which the serous membrane was extensively involved, and I have separated those in which it seemed to have been secondarily affected from those in which the disease was recorded as having been of primary origin.

There are 103 cases recorded in our post-mortem books in which the peritoneum was extensively invaded by malignant disease; in 44 of these the malady was either confined to the serous membrane or the pathologist has stated that it appeared to be of primary origin, whilst in 59 some abdominal organ was the seat of cancer and the peritoneal tumours were regarded as secondary. You must not, however, suppose that these figures afford a fair estimate of the relative frequency with which the peritoneum is primarily or secondarily affected, for in the earlier books only the rarer cases are usually recorded, and the pathologist would naturally select those belonging to the former class.

It is difficult satisfactorily to group together the various

forms assumed by peritoneal cancer where minute details as to the anatomical structure of the tumours are not given, but clinically we may separate them roughly according to their size and consistence. For example, we meet with what is called "miliary carcinoma," with another class in which huge soft tumours form the most prominent feature, and a third variety in which smaller masses of cancer, usually composed of scirrhus, are scattered over the serous membrane. In a few instances the tumours are recorded as "colloid" or "melanotic."

1. *Miliary Carcinoma of the Peritoneum.*

Small tubercles, forming the "miliary" variety of cancer, were found in seventeen out of the forty-four primary cases. The tubercles are described as extensively scattered over all parts of the peritoneum, but they were in most instances especially numerous in the pelvis, where the largest nodules presented themselves. As in the case of tubercular peritonitis, the omentum sometimes formed a tumour, being consolidated by lymph, and this is mentioned as a prominent feature in the morbid appearances in eight cases. Another part in which they also presented themselves in great numbers was the under surface of the diaphragm. The nodules varied somewhat in size; some are described simply as "hard tubercles," others as varying from the "size of a pin's head to that of a pea," others from "a grain of rice up to a sixpence;" most of them, especially of the smaller size, were hard, but others were soft, and in one instance they were "very vascular." In one case, when examined by the microscope, they appeared to consist of "nuclei intermixed with fine fibrous tissue."

The irritation set up by these firm, hard nodules is evidently severe, for they were accompanied in seven cases by recent lymph, and in seven by extensive adhesions of the viscera. The changes in the omentum appeared to

be mostly inflammatory, but the thickening and crumpling together of this structure exceeded in extent what was observed when it was the seat of the ordinary tubercular change, to which I have in a former lecture directed your attention. A large amount of serum is recorded to have been present in six, but, judging from the cases I have myself seen, I should say ascites, to a greater or less extent, is rarely absent. In only one instance is the fluid mentioned as bloody or discoloured.

The results of the chronic inflammation and of the exudations thus produced were necessarily serious. In one instance the liver was compressed and atrophied by the mass of lymph and carcinomatous material surrounding it ; in another the intestines were so much constricted that the finger could be scarcely introduced ; in one where the pressure on the mesentery had been very severe, the lacteals were found distended with chyle, and in one death resulted from the constriction of a portion of intestine by a band connected with a nodule. As a general rule, the most striking results were produced by the thickening of the peritoneum ; the intestines were massed together and drawn backwards to the spine by the contraction of the mesentery, and were concealed from view, when the abdomen was opened, by the serum occupying the cavity of the peritoneum.

You would naturally expect that when a serous membrane was thus attacked by malignant disease, the organs covered by it would be generally invaded. This, however, was not the case. In only one out of the seventeen a slight growth is mentioned as having occurred in the liver ; the mesenteric and lumbar glands are not once stated to have been diseased ; the stomach presented a slight thickening of its coats in one instance, and the intestines, spleen, pancreas, and kidneys seem always to have escaped infection. In three there were slight secondary growths in the lungs, but the pleura is noticed as being the seat of the same kind of malignant tubercle as the peritoneum in seven cases, and in most it was asso-

ciated with the presence of fluid. There is no mention of a similar condition of the pericardium or of the arachnoid in any instance.

It is, I think, evident from the above facts that "miliary carcinoma" of the peritoneum is not apt to invade the neighbouring organs by mere contact, nor is its infectious material carried onwards by the blood-vessels, otherwise the liver would more frequently have presented evidence of infection. The results produced were those chiefly of chronic inflammation, consisting in the effusion of fluid and contractions of the mesentery and of the neighbouring organs.

Let us next examine the cases in which "miliary carcinoma" occurred along with, or as a result of, malignant disease of some of the abdominal viscera. It was present in eighteen cases out of the fifty-nine in which the disease of the peritoneum appeared to be secondary to cancer of some other organ. Of these four were associated with cancer of the gall-bladder, five with a similar affection of the liver, eight with cancer of the stomach, and seven with that of the pancreas. But when we compare these with the total number of cases of malignant disease of these several organs registered in the post-mortem books during the same period, we find that one in every three of the cases of cancer of the gall-bladder, and one in every ten of those of cancer of the pancreas was accompanied by miliary cancer of the peritoneum, whilst only one case in sixteen of the cancers of the stomach, and one in every thirty of those of the liver was associated with this condition. It is quite impossible that such a difference in the liability to its occurrence can be the result of accident, and it seems to point to the disease having been conveyed by the lymphatics of the deeper parts of the abdomen, and disseminated by them upon the serous membrane, whilst the comparative rarity with which the liver has been involved shows that this form of carcinoma is not generally propagated through the medium of the blood-vessels. In the case of the stomach there is only

one instance of ulceration of the mucous membrane recorded as associated with miliary cancer, the rest having been malignant tumours of the walls of the organ. Where infection of the system occurred after cancerous ulceration of the stomach it appeared to have resulted from the conveyance of the carcinomatous elements by the blood-vessels to the liver, or by its extension by contact to the neighbouring structures.

It is evident from the facts we have just ascertained that the miliary form of cancer we meet with in the peritoneum and other serous membranes differs in many respects from malignant tumours affecting the limbs and viscera. The nodules of which it is composed seldom attain a great size, but they become rapidly disseminated over the surface of the peritoneum, and frequently affect the pleura; they rarely involve the organs situated below them and they seem to set up chronic inflammatory action and lead to great thickening and contraction of the serous membrane. Microscopical investigations have proved that these bodies are situated in the lymphatics, and that they originate in a proliferation of the endothelium. The malignant nature of the disease has been denied by some, but the occurrence of the nodules as secondary formations along with cancer of the gall-bladder, pancreas, and other abdominal organs is sufficient to show that they are of this character.

In attempting to sketch the clinical history of these cases it will be necessary that we should confine our attention to those in which the disease is primary, for where it is secondary, the symptoms arising from the implication of the lymphatics of the serous membrane are usually masked by the more prominent manifestations of the disturbance of the functions of the organ primarily affected. As these primary cases are, however, rare, the experience of any single practitioner must be very limited.

We are so in the habit of regarding all malignant growths as chronic maladies that you will be surprised when I mention that miliary cancer occasionally begins as

an acute affection. I find in our records a well-marked instance which I have transcribed in the following case :

Case 1.—A woman, twenty-five years of age, was suddenly attacked two weeks before her admission with sharp pain of the abdomen, described by her "as if she was being cut with knives." The pain had somewhat decreased in severity, although she still was suffering from it on her reception into the hospital.

She had lost flesh, had no appetite ; there was no evidence of fluid in the abdomen, and the temperature was 101°. Before the pain came on she had not suffered from pain after food, or constipation.

Three days after her admission the temperature rose to 103·5°, the abdomen was slightly distended, was tender upon pressure, and there was increased resistance in the left iliac region.

On the 6th day there was severe retching, the bowels were relaxed, temperature 103·5°

Seventh day.—No pain now excepting on deep inspiration.

During the following three or four weeks the pain and soreness continued, but varied at different times in severity ; there was also vomiting of a greenish fluid. Five weeks after admission the tongue is recorded as "red and pointed." After this she continued to vomit almost every day a dark green fluid. The abdomen was never much distended, but it gradually became less so, and during the last two or three weeks of her life it was described as "flat, brawny, and resistant." After the first week the severe pain subsided, and the temperature became normal, but the emaciation increased, and she sank from exhaustion ten weeks after the commencement of her illness.

Post-mortem examination.—The peritoneal cavity was entirely obliterated, the intestines, liver, and other organs all being adherent to each other and to the parietal layer of the peritoneum. On the peritoneum, and especially on the omentum, there were numbers of grey bodies, about the size of split peas ; they were firm, flat on the surface and isolated, but very closely crowded together. Peritoneum everywhere covered with these bodies. The mucous membrane of the rectum intensely congested, and there was an ulcer extending from the anus upwards. The small intestines were so constricted by the adhesions that a finger could be inserted with great difficulty in some parts of their course.

You might be suspicious from the history of this case, the youth of the patient, the suddenness of the attack, and the elevation of temperature, that it was one of ordinary tubercular, and not of carcinomatous, peritonitis, but the description of the tubercles seem to leave no doubt that it was one of malignant disease, and the experienced

pathologist who recorded the *post-mortem* notes has entered it unhesitatingly as one of "cancerous tubercle of the peritoneum."

You will observe, however, that the case agrees very closely with tubercular affection of the peritoneum, the inflammatory symptoms being at first the most prominent, the cause that lighted up the inflammation only being different. The circumstances that might lead in a similar case to a suspicion of its true nature would be the cessation of pain and the fall of the temperature to the normal point, whilst rapid emaciation and loss of strength continued, together with the circumstance that no indications of pulmonary tuberculosis could be discovered.

Ordinarily, however, miliary carcinoma is not attended with fever, as you will see in the following case that has just ended fatally.

Case 2.—A man, sixty-four years of age, was admitted into my wards, September 24th, 1888. He had always enjoyed good health before the date of his present illness. Had been in the habit of taking ale and spirits in moderation, but never to excess. His present complaint began suddenly, six weeks before his admission, with flushings of his face, a rushing of blood to the ears on stooping, giddiness, and a sensation as if the heart were stopping in its action. This was followed by occasional vomiting after food, but there was no pain after eating. Two or three weeks ago he noticed that his abdomen was swollen, which he attributed to his food not agreeing with him.

When admitted he had an emaciated appearance, and stated that he had lost two stones in weight during the preceding six weeks. He had some pain in the chest, back and epigastrium, which was easier when lying on either side than when he rested on the back. He never, however, complained of much pain. There was also slight tenderness on pressure over the left side of the abdomen. Tongue pale and flabby, appetite very bad, vomited slightly during the day, but more generally towards evening, pulse frequent, 100, temperature 98·4°. Cough with some mucous expectoration.

The abdomen was somewhat swollen, but not excessively so; fluctuation was quite distinct; the veins on the front of the abdomen were enlarged, but not so much so as in cases of cirrhosis; no enlarged glands of the navel; glands of groin slightly increased in size. A small hard nodule could be felt in the integuments over the left side of the abdomen. On percussion there was a dull note over all parts of the abdomen, and the space over the colon, which usually affords a tympanitic sound in ascites,

could not be distinguished from the neighbouring parts. The distance between the umbilicus and the zyphoid cartilage was greater than that between the umbilicus and the pubes. When the patient was placed upon his knees with the head downwards, some tenderness was observed over the left loin, and there was here an absence of the usual clear note below the kidney, so that the whole space was dull on percussion from the lowest rib to the ilium. The note was somewhat clearer over the right loin. No nodules could be discovered by examination by the rectum. There was also some dulness below the left scapula.

October 8th. — Vomiting after food continues, especially towards evening. Cough very troublesome. Has lost four pounds in weight in four days. Temperature normal, urine 1024, no albumen and no deposit.

11th.—Vomiting persists, cough very troublesome, but not much expectoration. The distension of the abdomen had decreased two inches at the umbilicus.

18th.—Vomiting more constant, has no pain anywhere. Short, dry cough very troublesome.

After this date he rapidly became more feeble and died October 20th.

Post-mortem examination.—There was a moderate quantity of sero-purulent fluid in the peritoneal cavity, the whole surface of the peritoneum was covered by small hard nodules, the mesentery was greatly thickened and contracted, and the whole of the small intestines were matted together into a mass and retracted towards the spine. All the other organs were healthy.

You all know that cancer is believed to be one of the most painful diseases to which man is liable, and those of you who observed at the port-mortem examination of the above case the thickening of the peritoneum and the matting together and retraction of the viscera, would expect that the patient had suffered severely during, or at the beginning of, his malady. You will remark, however, in the clinical notes, that this was not the case, but on the contrary, although he was constantly questioned upon the point, he maintained that at first he had only slight uneasiness after food, as "though he had eaten too much," and that he never subsequently suffered much pain. But if the complaint may come on thus insidiously, you will naturally inquire whether it is not generally ushered in with severe symptoms, and if not, whether there is any sign to which you can trust as an indication that it is commencing.

The earliest symptoms of which the patients complained

are recorded in ten cases, and in only one severe pain of the abdomen is at all mentioned; four are said to have been at first entirely free from pain, the chief symptoms being swelling of the abdomen; two were in the first instance attacked by vomiting and diarrhœa, in one there was vomiting and abdominal swelling, and two required medical attention on account of constipation, which was afterwards followed by some pain.

From these facts it will be seen that severe abdominal pain is usually at first absent, and I think you cannot fail to be struck with the manner in which the disease commenced in Case 2, where the patient first complained of palpitation and giddiness, without a single symptom pointing to an affection of the peritoneum, excepting occasional vomiting. I have, however, seen instances in which pain of a griping character was at first the prominent symptom, and as an illustration of the difficulty of arriving at a diagnosis under such circumstances, I have added the following case:

Case 3.—A man, between thirty and forty years of age, was admitted into my wards, complaining of attacks of severe pain of the abdomen. During the intervals of the attacks he seemed in tolerable health, the appetite was good, but the bowels were slightly constipated. Although I frequently and carefully examined the abdomen, I was unable to discover any condition likely to give rise to the pain, the attacks were of short duration, and the nurse reported that he did not seem to suffer much whilst it was present.

As his general health appeared to be good, I came very unwillingly to the conclusion that he was malingering, and ordered his dismissal from the hospital. Before this could be acted upon, he had a very severe attack of pain, followed by a small amount of ascites, and on an examination being made by the rectum, some small hard nodules were discovered in the lower part of the peritoneum. The fluid rapidly increased, he lost flesh and strength, and eventually sank from exhaustion.

Post-mortem examination.—Miliary carcinoma of the peritoneum was discovered, accompanied by the usual appearances of chronic peritonitis.

Although you may, from want of definite symptoms, be unable to fix upon the actual seat of the morbid action, the rapid loss of flesh which was remarked in Case 2, and

which is almost always present in the early stages should awaken your suspicions as to the probability of malignant disease being present in some of the abdominal organs. It is not merely the diminution of weight, but the accompanying feebleness and want of energy that so often usher in malignant disorders, that should put you on your guard, whenever you hear them complained of by a person at, or above the middle period of life. Under such circumstances always give a cautious prognosis, and try by careful and repeated examinations to ascertain whether any organ has become affected.

Ascites is not only an early symptom, but it usually persists until the termination of the case. The amount of fluid is less than in cirrhosis of the liver, and in some instances it diminishes as the disease advances. It is not so quickly reproduced after tapping, as where the operation is performed in cirrhosis, but it is more often followed by a rise of temperature and other symptoms indicating inflammation of the peritoneum; in only one instance it is recorded that the fluid did not again accumulate after it had been evacuated by the trocar.

During the course of the disease pain was a more variable symptom than might be supposed. Thus, in only three it is stated to have been severe, in one it was occasionally present, in one it was slight, in two it did not occur until some time after the admission and disappeared again before the death of the patient. Judging from my own experience, I should say that the pain is most severe in cases in which there is but little ascites, and that where there is much fluid a feeling of distension and discomfort is more felt than actual pain. In Case 2, which you have lately had an opportunity of observing, pain was never severe, and it was only when minutely questioned on the point that the patient admitted that he ever experienced it.

Tenderness of the abdomen on pressure is also a variable symptom, and those of you who were present at the post-mortem examination of Case 2 must have been surprised how little it was complained of, when you saw the

amount of thickening of the peritoneum that had taken place. In our records it is stated that in two instances there was no tenderness at any period of the case, whilst in two it was a prominent symptom. I do not remember to have ever observed tenderness over the whole abdomen at the same time, but I have remarked that certain parts were tender when the pressure of the hand was deep and prolonged. I suspect that the amount of fluid prevents the pressure being experienced as a painful sensation, and that tenderness would be more complained of if it were sought for directly after tapping.

In two cases there was no vomiting, in four it only occurred occasionally, in one it took place only after food, and in one it is recorded as very severe. In Case 2 it was from the first one of the most prominent symptoms and became more severe and constant towards the termination of the patient's life. This was so much so that some diagnosed the case as one of obstruction at the pyloric orifice of the stomach, an opinion which was, however, readily disproved by the results obtained by washing out the organ with warm water.

The bowels were constipated in two instances, but diarrhœa was a prominent symptom in five. I think it will be found that constipation usually occurs at an early period of the disease, and is replaced by severe, often intractable, diarrhœa, towards its close.

Rapid loss of flesh is an invariable symptom; it commences early, or even precedes all other indications of disease, and continues until the termination of the case. Along with it is the loss of energy and the hopelessness that form such striking features in all forms of malignant disease. The temperature usually remains normal, or sinks below the normal point, but it occasionally rises for a few days if the inflammation of the serous membrane becomes more than usually active, as after the operation of tapping.

In Case 2 you must all have been struck with the pallor of the lips and cheeks of the patient, and, as you know,

anæmia is one of the most constant features of malignant disease. You must not, however, count too certainly upon the absence of this symptom in the early stage of the malady as a proof that the disease is not one of a cancerous nature. The next case is intended as an illustration of this remark.

Case 4.—A woman, about thirty-three years of age, was admitted into my wards with ascites. It had come on suddenly, without pain or tenderness of the abdomen, and there was no vomiting. She had been strictly temperate, and I would have been led to attribute the malady to miliary carcinoma, had not her fresh, healthy colour and the total absence of anæmia appeared to negative the idea.

The case, however, slowly ran its course, and on post-mortem examination the usual evidences of miliary carcinoma of the peritoneum were met with.

This was, however, only an exception to a general rule, for in most instances the anæmia shows itself at an early period, and continues to the termination of the case.

With a disease thus insidious in its invasion and so variable as regards its symptoms, the physical signs are, of course, of the utmost importance; indeed, you will find it impossible without them to arrive in most cases at a satisfactory diagnosis.

I have before mentioned that ascites is almost always observed from an early period of the illness, but the abdomen rarely presents the very distended appearance so common in cirrhosis. The veins are enlarged, but not to the same extent as in liver disease, nor do we observe the extensive anastomoses between those of the lower part of the thorax and of the abdomen.

You will remember that in the description of the pathological changes we found that in a certain number of cases the omentum was so thickened that it formed a well-marked tumour. This is, however, rarely detected during the life of the patient, only three cases being mentioned in our records in which a tumour was noticed, and in each it occupied the umbilical region.

But not unfrequently you will be able to discover by

careful examination minute, hard, movable nodules under the skin, and they are more generally found at the sides than on the front of the abdomen. After tapping you may now and then observe a hard nodule in the cicatrix, and the same circumstance may be remarked in old scars on the abdominal parietes. As an illustration of the above remark I may mention that a woman is at present in my wards with peritoneal carcinoma, and a hard nodule has developed itself in the site of the scar resulting from the operation for ovarian tumour performed two years ago.

Notwithstanding such evidences of infection of the lymphatics of the skin, you will rarely discover any great enlargement of the glands of the groin, and I cannot call to mind any case in which those of the axillæ or neck were enlarged, although these parts have always been carefully examined.

The note on percussion is uniformly dull, even over the umbilical region, where the colon is ordinarily found to float in the ascites arising from cirrhosis, and when you turn the patient from side to side you are unable to elicit a tympanitic sound on the flanks, even when the quantity of fluid is not excessive. This arises from the retraction and displacement of the intestines caused by the contraction of the mesentery and other parts of the peritoneum, and it is one of the most reliable of the physical signs of the disease. You are aware that when you place a healthy person on his knees with his head downwards, you can ordinarily detect by percussion a tolerably clear space below and external to each kidney. But in miliary carcinoma of the peritoneum you generally find these parts quite dull from the retraction of the intestines, or the note on one side may be much clearer than that of the other, in case the mass of intestines has been drawn backwards to one side of the spine.

If you remove a little of the ascitic fluid you will find it richer in albumen than in the ascites arising from cirrhosis, and in some cases it is of the colour of blood. When allowed to stand, the microscope not unfrequently

detects numerous clumps of small cells of different shapes and sizes in the deposit that sinks to the bottom of the glass.

In every doubtful case of abdominal disease you should make it a practice to examine by the rectum, for you will in this way sometimes discover nodules when you are unable to distinguish them through the abdominal parietes. At present, for example, there is a case in my wards which I have no doubt is one of peritoneal carcinoma, in which nodules can be felt in this way.

The liver is rarely enlarged, nor is the splenic dulness increased in extent. I have never met with the physical signs of tubercular consolidation of the lungs in these cases, but not infrequently those of emphysema are present. I before drew your attention to the fact that miliary carcinoma often affects the pleura simultaneously with the peritoneum, and consequently in most cases you will meet with the physical signs of pleuritic effusion in one or both sides of the chest.

The course of the disease is always rapid, and the emaciation and feebleness increase towards the close of life. Of our cases three died between two and three months after the first appearance of the symptoms, one within four months, and three between four and six months; in the others it was impossible to fix the date for the commencement of the illness.

Miliary carcinoma of the peritoneum may be confounded with cirrhosis of the liver or with the ascitic form of tubercular peritonitis, and although it can in well-marked cases be readily distinguished from these, there is often considerable difficulty in arriving at a correct conclusion in the earlier stages of the malady.

In cirrhosis the history is different: the patient affected with it has usually been intemperate, he has suffered perhaps for many months from vomiting in the morning, loss of appetite, diarrhœa, or from hæmorrhage from the nose or stomach, or from bleeding from piles; whereas in miliary carcinoma he has been in most cases

in tolerable health before the first symptoms of his disease appeared. In cirrhosis, as time goes on, there is little complaint of vomiting or abdominal pain or tenderness, the appetite is not much affected, the bowels are regular or slightly constipated, the urine is high coloured and scanty, and the loss of flesh and strength is not rapid; whereas in the disease in question there is usually pain and tenderness in some part of the abdomen, the appetite is very bad, vomiting is frequent, the bowels obstinately confined or relaxed, the urine light coloured and of low specific gravity, and the loss of flesh, strength, and energy extremely rapid.

In cirrhosis the amount of fluid in the peritoneal cavity is usually large and tends constantly to increase, the superficial veins are much distended and tortuous, the space in the umbilical region occupied by the colon floating on the surface of the fluid affords a clear note on percussion, which varies with the position of the patient; in miliary carcinoma the amount of effusion is not excessive and often decreases as time goes on, the veins are not greatly dilated, there is an absence of the tympanitic note in the umbilical region, and nodules may be sometimes discovered in the integuments or by a rectal examination.

In cirrhosis the patient often improves under treatment, whilst in miliary carcinoma his condition steadily becomes worse in spite of all treatment, and death usually takes place within four or six months.

I have said that you must take into account the habits and previous condition of the patient, but you may be led into error if you place too great a reliance on the history. A case was admitted into my wards a year or two ago that afforded a good illustration of this.

Case 5.—A brewer's drayman, upwards of sixty years of age, had suffered from ascites for a short time before applying at the hospital. He admitted that he had been in the habit of drinking for many years, and as the amount of fluid was excessive and his other symptoms seemed to point to hepatic disorder, I diagnosed his case as one of cirrhosis and ordered him to be tapped. The fluid removed was, however, very much

stained with blood, and as he very rapidly lost flesh and strength I came to the conclusion that he was suffering from peritoneal carcinoma.

After death we found this to be the case, and the omentum was large, bulky, and thickened with lymph and miliary carcinoma.

In the above case malignant disease was not at first suspected, as it was very recently developed, and the thickening of the mesentery had not been sufficient to drag the intestines backwards and thus change the physical signs ordinarily met with in ascites arising from cirrhosis, but it shows how easily such cases may be mistaken in the early stages of the malady.

You will remember that when speaking of permanent ascites connected with tubercular peritonitis it was mentioned that this condition was associated either with cirrhosis of the liver or with a thickened condition of the peritoneum. In the "cirrhotic form" there is no more difficulty than in an ordinary case of cirrhosis, for as the disease of the liver precedes the peritonitis you have the same history and symptoms to direct you to a correct conclusion.

In ascites depending on a thickening of the peritoneum the physical signs are nearly the same as in miliary carcinoma. In the tubercular form, however, you do not meet with nodules in the skin or by examination through the rectum; there is usually considerable elevation of temperature, and diarrhœa is more frequent and obstinate than in cancer. But in addition to these there are in such cases almost always the signs of a tubercular affection of the lungs, and often an increased size of the spleen, which we do not meet with in cancer.

I am sorry I can give you little information upon the treatment of this disease, for unlike tubercular peritonitis every case seems to end fatally. You must try to relieve symptoms and to support the strength of the patient, and so to prolong the life you cannot hope to save.

2. *Soft Carcinoma of the Peritoneum.*

I have before mentioned that in miliary cancer of the peritoneum the omentum was the part in which thickening was ordinarily observed to take place to a sufficient extent to produce a tumour. This occurred in eight of the primary and in four of the secondary cases, or in about 34 per cent. of the whole number. But in the other forms of peritoneal cancer growths of considerable magnitude are always present, are not confined to the omentum, and they afford most valuable assistance in the diagnosis of the disease. In twenty cases in our post-mortem records the tumours are described as "encephaloid" or as "soft cancer," in five there were extensive "colloid" tumours, and two were of the melanotic variety. In thirty-seven the nature of the tumour is not expressly mentioned, although there is little doubt from the descriptions given that a large proportion consisted of "scirrhus."

In three out of seven of the primary cases of soft cancer the tumour occupied the larger part of the abdominal cavity, and enclosed the intestines within its structure; in one it appeared to spring from the mesentery, and in another the omentum was the part chiefly involved. Amongst the secondary cases 46 per cent. were connected with the mesentery, in one the tumours were generally diffused over the serous surface, and in all the others the new growth had mainly implicated the great omentum. In the softer forms of peritoneal cancer, then, the mesentery is more frequently the point from which the disease originates than in any of the other varieties of carcinoma, and when we remember the encephaloid form is especially apt to attack secreting organs in other parts of the body, we may, I think, conclude that it is on account of the numerous glands situated in this structure that it so frequently makes its appearance in this locality.

When speaking to you on the subject of gastric carcinoma I mentioned that we must refer the early cachexia

and rapid wasting of this disease, not merely to the effects of the new growth upon the general nutrition, but also to the accompanying atrophy of the tubules of the stomach that is so frequently associated with it. In like manner, I think, we must look upon the alterations in the lacteal glands we have just described as one of the most potent causes of the constitutional effects we are in the habit of observing in the softer forms of abdominal tumours.

If we now turn our attention to the secondary cases of soft cancer of the peritoneum, we find that only 2 per cent. of the cases of cancer of the stomach, and 2 per cent. of those of the liver recorded in our post-mortem books were accompanied by this variety of malignant disease, and instead of seeing, as we did in miliary carcinoma, that a malignant affection of the gall-bladder or pancreas usually gave rise to that of the serous membrane, the softer varieties of cancer were rarely accompanied by tumours connected with these organs. On the other hand, carcinoma of the uterus or its appendages, of the kidneys, or of one of the bones, was present in 80 per cent. of this form of malignant disease.

It is interesting to remark that, although the gall-bladder was rarely affected in the softer forms of peritoneal carcinoma, the presence of gall-stones is far more frequently recorded in these than in any of the other varieties, and we cannot but suspect that there must be some connection between these new growths and the formation of biliary calculi. Whether some abnormal condition of the liver that gives rise to these concretions predisposes also to the growth of soft cancer, or whether undue action is thrown upon the hepatic cells to excrete materials produced by the retrograde processes that occur in all quickly growing tumours we are unable to say, but the fact may furnish a hint to future inquirers into the nature of this form of malignant disease.

The clinical histories of thirteen cases of soft cancer of the peritoneum are recorded, six being of primary and seven of secondary origin. As the viscera were frequently

affected in the primary cases by extension of the growths into their structures, it will be more convenient to examine both classes together. Of the thirteen cases eight were males and five females. As regards age, two were between 20 and 30, two in each subsequent decennial period up to 60, four between 60 and 70, and only one above 70.

We are so in the habit of regarding malignant disease as occurring only in middle or advanced age, that the early period of life at which these soft and quickly growing tumours occasionally form is well worthy of your attention. For example, a young woman, about twenty-four years of age, was admitted into my wards with symptoms indicative of serious abdominal mischief, which I did not refer to malignant disease solely on account of her youth, and yet after her death we discovered a huge carcinomatous tumour, originating probably in the stomach.

Although, then, as a general rule, this, like the other forms of carcinoma, is more usually met with at or after middle age, yet you must in each case be guided by the history and physical signs, and not allow yourselves to be too much biassed by a preconceived idea as to the improbability of its occurrence in the period of youth.

We saw that miliary carcinoma might occur in an acute form, but that this was rare; but in three instances the symptoms of soft cancer appeared suddenly, and whilst the patients believed themselves to be in the enjoyment of good health.

In one, a man, only twenty-one years of age, received an injury to the abdomen which produced severe pain and was quickly followed by dropsy. He suffered subsequently from vomiting, pain and tenderness of the abdomen, and rapid emaciation, his temperature being 101·6°. After death, which took place two months after the accident, a large mass of medullary carcinoma was found situated between the spleen and the diaphragm, which extended backwards and enclosed the left kidney. There were also signs of recent inflammation over the whole surface of the peritoneum. In the second the patient received a severe

strain when at work, which was followed by hæmatemesis, but as cancer of the stomach was found after death, it is probable that he had neglected other previous indications of the disease, and was not aware of his being out of health until his attention was attracted by the vomiting of blood. A third patient attributed her first symptoms to exposure to wet and cold, but as cancer of the ovaries was discovered on post-mortem examination in addition to that of the peritoneum, a similar explanation may be supposed to account for the apparent suddenness of her attack.

In eight out of twelve cases affected with this form of malignant disease, the first symptoms were pain of the abdomen of greater or less severity, unattended by fever, and without any other signs of disturbance of the functions of the abdominal viscera.

In the subsequent stages of the disorder seven out of twelve complained of severe pain of the abdomen, increased by movement or by pressure; in one instance pain was not experienced until after tapping, the operation having apparently set up inflammation of the serous membrane.

Vomiting was frequent and severe in four; in one it was almost constant, in many of the remaining cases it was absent, or occurred only occasionally. The appetite was usually bad from the first, and became worse as the disease progressed. In most instances the bowels were confined until towards the end of life, when intractable diarrhœa sometimes appeared. In all but one, loss of flesh and strength took place from the first, and increased in proportion to the rapidity with which the disease progressed. In the exceptional case no emaciation was observed until some time after the other symptoms had shown themselves.

The pulse was weak and feeble, but was not at first increased in frequency, but it generally became quicker as the weakness of the patient augmented. The temperature, with the exception of the acute case before mentioned, was always at or below the normal point, excepting in some instances when it rose after tapping.

As regards the physical signs accompanying this form of cancer. In almost every instance there was ascites, but the amount of the fluid varied greatly in different cases. In some it presented itself at the commencement, but in others not until the disease had existed for some time. Where the colour of the fluid is noted it is stated to have been bloody in every instance excepting one, and if I were to judge from my own experience, I should say that blood-stained serum is more commonly met with in this than in any of the other forms of malignant disease affecting the peritoneum.

Tumours were necessarily always present, but in two instances it is recorded that they were not discovered during life, and in some others they were only found after the fluid had been evacuated by tapping. In the primary cases they were usually situated about or below the umbilical region, but in the secondary more frequently in the hypogastrium, especially in the female. In some they were very large, filling the whole or a great part of the abdomen, and enclosing the intestines; in others they presented themselves at different parts of the peritoneum, and were of smaller size. The larger ones were usually fixed, being immovable by the pressure of the hand or by the respiration of the patient. In some cases a tumour could be found by vaginal or rectal examination when it could not be discovered through the abdominal walls, and in one the whole pelvis seemed to be occupied by an elastic mass, although the symptoms did not point to this locality. There is no mention of enlargement of the glands of the groin or axilla, and I have generally failed to find them increased in size or number in such cases, but nodules in the integuments of the chest and abdomen are recorded in some instances, and especially where there was at the same time carcinoma of the kidney.

The veins on the front of the abdomen were usually enlarged, but not to the same extent as in cirrhosis of the liver. The veins of the back are noted as enlarged in one instance, and this should be always looked for in any

doubtful case of abdominal carcinoma. Œdema of the lower limbs often occurred, especially where the tumours were large and deeply seated, or where the amount of ascites was excessive.

The percussion note varied according to the size and shape of the tumour and the amount of fluid in the peritoneum, but the clear space corresponding to the position of the colon could be generally recognised, as this part of the intestinal canal was rarely displaced, as in miliary carcinoma. Where tumours could not be distinguished, the adhesions over them sometimes rendered the gravitation of the abdominal fluid slower than usual, and thus afforded a valuable aid in diagnosis.

The liver is much more apt to be affected in this form than in miliary carcinoma; in three cases it is recorded to have been enlarged during life, whilst in two it is expressly stated not to have projected below the ribs. Physical signs indicating tubercular consolidation of the lungs are not mentioned in any case, nor was pleurisy with effusion observed. The sonorous rhonchi mentioned in some of the cases which were attended with dyspnœa were probably the result of the pushing upwards of the diaphragm by the distension of the abdomen, by the tumour or by the accompanying ascites.

The duration of the disease was in most cases short; one died within six weeks, another within seven weeks, and three within four months of the appearance of the first symptoms. In one the disease is said to have lasted one year, and in another there had been symptoms of some affection of the abdomen for eighteen months.

We shall now be able to see how the clinical aspect of a case of soft cancer of the peritoneum differs from one of miliary carcinoma. In both there is great loss of flesh, strength, and appetite, without accompanying fever, and the progress of the disease is rapid; in both you may have pain and tenderness of the abdomen, vomiting, and constipation, followed by intractable diarrhœa. But in miliary carcinoma the ascites is an earlier and a more prominent

feature, and there is usually less pain and tenderness than in soft cancer, the space occupied by the colon affords a dull note, and a large tumour can be rarely detected, although nodules may be often discovered by examination through the rectum or on the integuments of the abdomen, In addition to these, pleuritic effusion often presents itself on one or both sides, and, in case of tapping, the fluid withdrawn is usually free from blood. In soft cancer the case is more apt to begin with acute symptoms, and may follow an injury to the abdomen, the space occupied by the colon is tympanitic on percussion, one or more tumours, often of large size, can be generally discovered, pleuritic effusion is rare, and the fluid contained in the abdominal cavity is almost always bloodstained. Secondary cases of miliary carcinoma are most apt to follow cancer of the gall-bladder, pancreas, or ovaries ; soft cancers are usually the result of a similar affection of the uterine organs, kidneys, or lymphatic glands.

There were only five cases of extensive colloid cancer of the peritoneum recorded, three being primary and two apparently secondary. Of the primary, one formed a huge tumour attached to the mesentery, in another the disease was chiefly confined to the omentum, whilst in the third the whole of the intestines were adherent and covered by a gelatinous material. Of the secondary cases one seemed to have originated in the colon, the other in the stomach, but in both there was extensive degeneration of the serous membrane.

There were two instances of melanotic cancer of the peritoneum, but in both the serous membrane was only implicated along with most of the other structures of the body. In one the primary mischief originated in the orbit of the right eye, in the other there was a black patch on the lower lip, whilst growths of a similar description were discovered in the bones, liver, brain, and uterus, as well as on the peritoneum.

3. *Scirrhous Cancer of the Peritoneum.*

There are thirty-seven cases recorded in which either the structure of the tumour is said to have been that of scirrhus, or its nature is not sufficiently described for the purpose of diagnosis; of these fourteen were primary and twenty-three probably secondary to malignant disease of some of the abdominal organs. The tumours were generally of smaller size, more numerous, and more generally diffused over the whole surface of the serous membrane than in the case of the softer forms of the disease. The omentum was, as in the other groups, a common site for the formation of the tumour, this being recorded in seventeen cases, or in nearly one half of the whole number. The mesentery, which we found was usually thickened and contracted in miliary carcinoma, and was a frequent point of origin for encephaloid growths, was in this group also commonly affected. I have already pointed out to you that the frequent implication of this structure in abdominal cancer must, by hindering the introduction of new material into the circulation, greatly assist in the production of the rapid wasting so constantly observed in this disease. The presence of ascites is mentioned in ten cases, but in only three the fluid is stated to have been bloody.

The organs the disease of which seems to have chiefly given rise to the affection of the peritoneum were the generative organs in the female, and the stomach, large intestines and liver in the other sex; but it is remarkable that the pancreas, gall-bladder, and kidney, which were diseased in miliary carcinoma respectively in the proportions of 44 per cent., 22 per cent., and 15 per cent. of all the secondary cases, were in this group scarcely ever affected, the gall-bladder and pancreas being diseased in only 4 per cent., while in no instance did cancer of the kidney appear to have originated that of the serous membrane. The simultaneous affection of the pleura, which we found to

exist in 41 per cent. of the primary cases of miliary carcinoma, was recorded in only 7 per cent. of the group now under consideration.

The clinical histories of twenty-one cases are recorded in our books, ten of these being primary and eleven secondary.

Of the primary cases only three complained of pain of the abdomen at the commencement of the illness, and this was not merely the result of the point being overlooked in the records, for the absence of pain as an early symptom is often expressly noted. In three there was marked loss of flesh at this period, and in three the abdomen is said to have been swollen. I am wishful to impress on your minds that this formidable disease not unfrequently commences without pain, as I have seen the freedom from suffering create so much suprise that doubt has been expressed as to the correctness of a diagnosis, which, but for this, would have been looked upon as certain. In many instances the patient only complains of weakness and some symptoms of dyspepsia. Let me cite you the following case as an illustration of these remarks.

Case 6.—A gentleman, forty-five years of age, consulted me for constipation of the bowels, to which he had always been subject, but which had latterly increased. He had no pain, no tenderness or swelling of the abdomen, but he was thin, and complained of feeling weak in body and depressed in spirits. He was about to visit the South of France, in the hope that a change of air and scene would restore his usual vigour. About three months afterwards he was attacked with pain of the abdomen, and his physician discovered the presence of fluid in the peritoneal cavity. This so quickly increased that in two or three weeks it was considered necessary to tap him, and some nodular tumours were then discovered.

On his return home he was greatly emaciated and was extremely feeble, the appetite was bad, the bowels much constipated, he suffered from frequent attacks of vomiting, and there was no difficulty in detecting a number of hard masses in the abdomen. He rapidly sank, and died within four months of the appearance of the ascites.

Now although in this case there was at first no pain or tenderness of the abdomen, the gradual loss of flesh

was sufficient to make any physician suspicious that serious mischief was present, or was about to be developed in some part of his digestive tract. But you meet with cases in which you have at first not only no pain but no loss of flesh to excite your suspicions, and you may therefore readily overlook the real nature of the disease. Let me quote you another case which impressed my mind very forcibly as to the care with which we should examine our patients whenever abdominal symptoms present themselves.

Case 7.—A stout, fresh-coloured country gentleman, sixty-four years of age, complained that a truss he had been ordered to wear for an umbilical hernia did not seem to fit him. He stated that he had always enjoyed excellent health, but that for the last six months he had suffered from occasional waterbrash, and that his appetite was not so good as formerly.

I found the abdomen somewhat swollen and evidently containing a small quantity of fluid, but I was surprised to detect in a person so apparently healthy an obscure sensation of hardness, as if from the presence of a tumour, in the left side.

When I next saw him the abdominal swelling had become less, and a tumour could be distinctly made out to the left of the navel.

He was accustomed to yachting, and went a voyage, and on his return six months afterwards I found that the ascites had entirely disappeared, but that the tumour was larger and more distinct. After this he began to lose weight rapidly, and at the end of a year he was becoming emaciated, although his appetite was good; the waterbrash had disappeared, and he did not suffer from pain.

I did not see him after this date, but I heard that the ascites returned and required frequent tapping, and that he eventually sank. On post-mortem examination cancerous tumours of the peritoneum were found, as had been diagnosed during life.

This patient never suffered much from pain, and I have met with many similar cases, but, as a general rule, pain sooner or later becomes the prominent symptom, and is, I think, most severe in the cases that run a rapid course. At first there is generally only a sensation of discomfort, but attacks of pain come on from time to time; they occur at first chiefly at night, and gradually increase in frequency and severity, until towards the end of the illness relief can only be obtained by the free and repeated use of

sedatives. Tenderness is often recorded as being felt over the site of the tumour, but an extreme degree, like what you meet with in inflammation of the peritoneum, is rarely present, excepting as the result of tapping.

Vomiting was a prominent symptom in only three of the ten primary cases, but I have seen it come on occasionally and with great severity accompanied by obstinate constipation. Where the stomach or colon was the seat of the original growth, vomiting often appeared at an early stage, and continued throughout the whole of the illness. The appetite was generally bad from the first, and became worse as time went on, being not unfrequently replaced by a disgust of all food. In some instances patients complained that they were unable to eat on account of the feeling of distension caused by the ascites, and a temporary increase of appetite followed the operation of tapping. The bowels, which were so commonly constipated in the early stage, almost always became loose as the disease progressed, and in six of the ten primary cases severe and intractable diarrhœa is recorded. Not unfrequently I have remarked that attacks of constipation alternate with those of diarrhœa, and during these vomiting is apt to show itself, and to persist until the bowels are relieved by medicine or by the return of the diarrhœa.

In all emaciation took place, and in most instances attained an extreme degree before death. The temperature is recorded in nine of the primary cases; in three it was normal, in five subnormal, and in only one it was irregular, there being slight elevations towards evening. In the secondary cases it was normal in two, subnormal in five, and variable in two. The irregularity in the temperature seemed to depend on the occurrence of complications, such as local inflammations, for it is the rule for it to remain at, or below the normal point in all cases of cancer of the peritoneum. I need not point out to you the great value of this observation, for you will remember that in tubercular peritonitis, which presents so many

features similar to the disease we are now discussing, an elevation of the temperature was almost always present.

As a rule the patients gradually became worse as the disease progressed, the pain steadily increased, and the absence of appetite and repeated attacks of diarrhœa exhausted their strength until they succumbed to the disorder. Two cases are, however, mentioned in our records in which the downward progress seemed to be arrested, the pain diminished, and an increase of weight took place. This was so striking in one instance that considerable doubt was felt as to the correctness of the diagnosis. I have seen various instances of temporary improvement in abdominal cancers, and have known patients leave the hospital under the idea they were convalescent, when in reality only a pause in the progress of the disease had taken place. In every case that I have seen, death was the termination of the malady, but the rapidity with which the final stage was reached varied greatly.

As regards the duration of the illness of the primary cases, one died under two months, three under three months, one under four months, one under six months, and two under seven months after the first appearance of the symptoms. It is more difficult to assign an accurate date for the commencement of the implication of the peritoneum in those of the secondary group, but of these two died within three months, one under nine and one under twelve months after the first manifestation of abdominal disease.

Let us next turn our attention to the physical signs accompanying this form of malignant disease. Ascites is, in most cases, an early symptom, and is rarely absent during the whole course of the illness. The quantity of fluid varies, however, greatly in different cases, in some the abdomen is so distended that the presence of tumours cannot be determined until after tapping, whilst in others considerable care is requisite to prevent the ascites being overlooked. In only one case it is expressly stated that no fluid was present during the whole time the patient was under observation. You are aware that small quantities

of fluid in the abdominal cavity are often best ascertained by placing the patient first on one side and then on the other, and percussing each side before and after he has changed his position. In this way the fluid is allowed to gravitate and a dull sound is afforded on the side on which he is resting, but a tympanitic note on the side that is uppermost. But in case of adhesions having taken place, the fluid may be unable to gravitate, or it may do so slowly and imperfectly. Such a case was lately in the wards and adhesions were diagnosed as present on each side of the abdomen, the correctness of the conclusion being afterwards proved by post-mortem examination.

As a general rule, there is no retraction of the transverse colon, so that the percussion note is not dull in the umbilical region, as is so generally the case in miliary carcinoma of the peritoneum.

The fluid that is removed when the patient is tapped is usually serous, although in some instances it is stained with blood. The veins of the abdomen are somewhat enlarged in case there is much fluid in the peritoneum, but not to the same extent as in cirrhosis of the liver, nor have I observed the veins at the back of the chest and loins prominent, as so often occurs in the softer forms of cancer of the abdominal cavity. The legs are often swollen from the ascites or from the pressure of the tumour, and this is especially apt to occur towards the end of life.

It is seldom that tumours cannot be discovered during life, although, as I said before, it may be necessary to remove the fluid before they can be clearly defined. As a general rule, there are many separate tumours, and they may be scattered over different parts of the peritoneum. As the omentum is the most common site for the larger growths, you must first search for them in the umbilical or the epigastric region, but in the secondary cases you will, especially in the female, more generally meet with the chief mass in the hypogastrium, as the pelvic organs are usually the seat of the original tumour. The tumours are usually hard, nodular, and of an irregular shape, their outlines

are often indistinct, and unless they become attached to the structures below them they can be generally moved by the pressure of the fingers or may change their position with the respirations of the patient. When they are large they usually afford a dull note on percussion, but when they are smaller in bulk you will often observe a dull sound on light, and a partially tympanitic sound on more forcible percussion.

Where local peritonitis has been set up you occasionally may detect by the hand a sensation as if two rough surfaces were rubbed against each other, and with the stethoscope a friction sound is readily perceived. In some instances the tumours become adherent to the abdominal parietes, and suppuration takes place in the walls. In one instance noted in our records the tumour was opened and a considerable quantity of pus was discharged.

Small nodules in the integuments are less frequent in this than in the softer forms of cancer, but occasionally they can be discovered. They are most frequently met with on the lateral parts of the abdomen, but nodules are also occasionally found in the vagina in the female, or through the walls of the rectum in the male, and I have seen cases in which their detection afforded considerable assistance in diagnosis. I have rarely found enlargement of the glands of the groin, navel, axilla, or neck.

The liver is not unfrequently felt projecting below the ribs, and may present well-marked elevations along its lower edge. Fluid is rarely met with in the pleura, as is so common in miliary cancer, and the only physical signs that are noticed in our records as to the state of the lungs are those of bronchitis.

As this form of cancer is chiefly characterised by the presence of a tumour, attended by pain and by ascites, any disease presenting these features may be confounded with it.

As these may be also present in certain forms of tubercular peritonitis, there may be considerable difficulty in distinguishing it from scirrhus of the peritoneum. Tuber-

cular peritonitis is, however, more common in young persons; scirrhus is rare in early life, and is more liable to occur at or after middle age. Tubercular peritonitis is more frequently ushered in by pain, whilst in scirrhus this is usually at first slight, but becomes more continuous and intense as the case proceeds. The temperature is more or less elevated in tubercular peritonitis, but generally remains at, or somewhat below the normal point in scirrhus. Emaciation and loss of flesh are more rapid in cancer and are often attended with anæmia, whilst the latter is uncommon in the other malady; the progress is much more rapid in cancer, and the duration is shorter.

As regards the physical signs, the amount of ascites is greater and it is more persistent in cancer, the tumours are more numerous, more irregular in shape, more tender on pressure, and more frequently afford a tympanitic note on forcible percussion; they grow more rapidly, and are more often attended by friction sound than in tubercular disease, and there is often a family history of cancer, or some of the organs of the body may present indications of a malignant growth.

Hydatid tumours of the peritoneum may give rise to a difficulty in diagnosis. The larger tumours of this kind connected with the omentum are more likely to be confounded with the softer forms of cancer, and may be distinguished from them by the long duration of the case and the absence of pain and of the cachexia so characteristic of malignant growths. The separate smaller hydatid cysts are more apt to simulate scirrhous tumours. They differ in the tumours being more elastic, more movable, having less clearly defined edges, and when superficial, in occasionally presenting a vibration on percussion, they do not increase rapidly in size, they are unaccompanied by pain or tenderness, whilst a mass can be not unfrequently discovered in the liver or in the pelvis. In addition to these the general health of the patient is unaffected and he presents no loss of flesh or of colour.

The most frequent difficulty we meet with is to distin-

guish between scirrhous tumours of the peritoneum and uterine fibroids, and this is especially the case when, as not unfrequently happens, there is also a growth near the uterus. Fibroids are, however, unattended with much pain, or with the characteristic cachexia of cancer, the tumours are more solid, have better-defined edges, present no tympanitic note upon deep percussion, and are generally unattended by ascites. In some cases, however, that have come under my notice the difficulty has been so great that it has been necessary to postpone the diagnosis until the progress of the disease and the development of other symptoms have enabled the real nature of the case to be ascertained.

As malignant disease of the peritoneum is not susceptible of cure, you may think it unnecessary that I should speak of its treatment. You must remember, however, that in some instances the progress of the malady seems to be arrested, and the patient for a time improves, and in addition to this, where you are unable to cure you may often prolong life, or at any rate relieve suffering.

In the earlier stages it is not advisable to confine your patient to the house, but exercise should be moderate and all undue fatigue avoided. A well-applied abdominal bandage of silk or flannel is often of much service, and should be constantly worn. The diet should be nutritious and digestible, and the bowels must be assisted by mild aperients when they are required.

When the patient is confined to his bed it is advisable to relieve pain as long as possible by local remedies alone. For example, you may use hot poultices sprinkled over with laudanum, or may apply spongio-piline wrung out of hot water and sprinkled over with equal parts of chloroform and belladonna liniment. As long as possible avoid the use of morphia, as it tends to lessen the appetite, and is consequently apt to reduce the patient's strength. I have often seen great relief afforded by frequent doses of chloral and bromide of potash, but when the later stages are approaching you cannot depend upon anything ex-

cepting morphia. Give it, then, either alone, or in combination with atropine, beginning with small doses and increasing then according to the necessity of the case. Its employment subcutaneously affords much more relief than when administered by the mouth, but when once you have commenced it you can rarely avoid its daily use in gradually increasing doses.

As soon as you have arrived at a certain diagnosis the use of all drugs, such as mercury and iodine, that have a tendency to lessen the strength of the patient, should be abandoned. Severe purgatives should for the same reason be avoided, and if constipation be present, the action of the bowels should be promoted by enemata or by the more stimulating kinds of aperients. Tonics are often of use; if there is much anæmia you may prescribe iron, but if this is not the case, quinine, the mineral acids, or the vegetable bitters are generally more useful.

The advisability of tapping when ascites is present is an important question. When the breathing is much affected or the patient is unable to eat on account of the distension the operation must of course be performed and repeated as often as necessary, but under other circumstances it is better to avoid it as long as possible. When, as is so common in the softer forms, the fluid is bloody, its removal favours rapid re-accumulation, and consequently withdraws a large amount of nutrient fluid from the circulation, and even when it is not blood-stained you must remember that it contains a much larger proportion of albumen than in the ascites arising from hepatic or renal disease. In addition to this the operation often sets up peritonitis and so proves dangerous. Nor must the extension of the malignant disease by the formation of nodules in the site of the puncture be forgotten, for I have not infrequently found them occur after tapping and after exploratory incisions.

LECTURE IX.

HYDATIDS OF THE PERITONEUM.

Gentlemen,—I have often had occasion to mention the difficulties that attend the diagnosis of abdominal diseases. We every now and then find, for instance, a tumour situated near an organ that by its pressure gives rises to symptoms that seem to indicate disease of the organ itself. A very instructive example of this is at present in our wards, and I wish to draw your attention to it. If it should teach us no other lesson, it will at any rate show us how carefully we should investigate all the circumstances of a case before we commit ourselves to a definite conclusion as to its nature.

The patient to whom I allude was sent into the hospital as a case of cancer of the stomach, the main facts of his history, as reported by the clerk, being as follows:

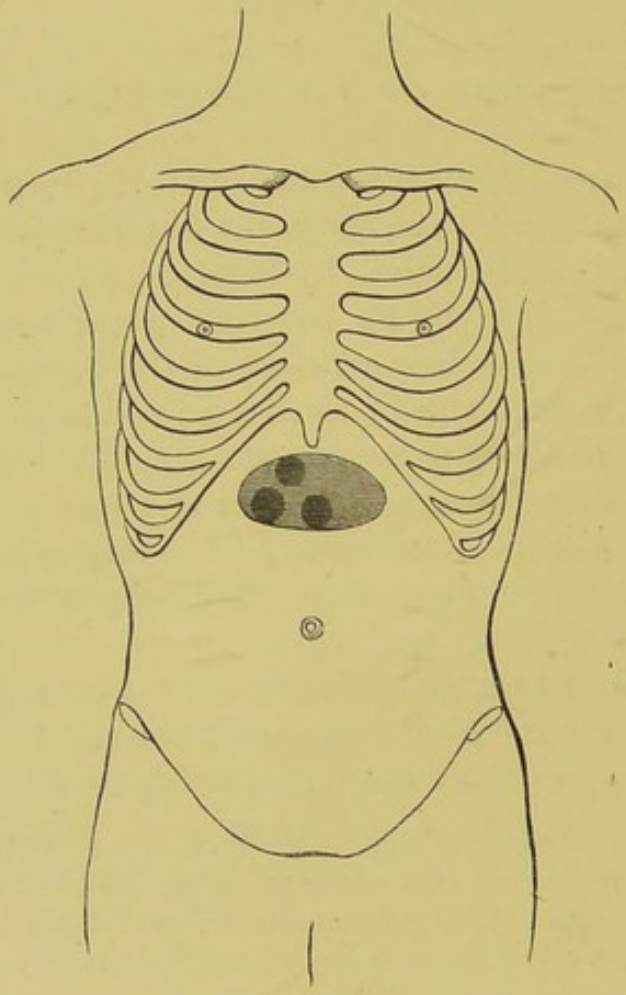
Case 1.—The patient is a railway porter, and is forty-three years of age. His father died from the effects of an accident, but his mother of cancer of the stomach at fifty-four. He had suffered from rheumatic fever three times, and stated that he had vomited blood on various occasions. Four years ago he was attacked with pain in the epigastric region and frequent vomiting, and for the last two years he has had to leave his employment on different occasions for four or five months at a time on account of similar attacks.

He now complains of pain of the epigastrium and back, aggravated after taking food but relieved by vomiting. The materials rejected from the stomach are stated to have been at first of a brownish colour, but now to be white, and, when examined microscopically, they are found to contain torulæ, but no sarcinæ. The appetite is not good, the bowels are rather confined.

A hard nodular mass can be readily felt in the epigastrium; it is tender

on pressure and moves with the respiration. It is dull on light, but gives a tympanitic sound on forcible percussion (see Fig. 9). The liver is not enlarged, and posteriorly its boundaries present no curve, nor is the area of dulness increased. The splenic dulness is increased in extent, but the edge of the organ cannot be felt below the hypochondrium. Temperature 97°, pulse 75, urine 1025, not albuminous.

FIG. 9.—Diagram of epigastric tumours in Case 1.



The stomach was ordered to be regularly washed out, and the pain almost immediately disappeared and the vomiting ceased. After one month's treatment he had lost all his symptoms and had gained one stone in weight, but as he was desirous of having an operation performed he was transferred to the care of my colleague Mr. McCarthy. This gentleman laid open the abdomen, and found, as had been diagnosed, a large number of hydatid cysts which he removed. No bad symptoms followed the operation, there has been no return of the vomiting, and when I last heard of him he was nearly well.

The first point that struck us on looking at this patient was that, although he was stated to have lost flesh, he did not present the very emaciated appearance of a man who had been for a long time the subject of gastric cancer. His lips and skin displayed a fair amount of colour, and, although he had suffered from vomiting, it was not constant, and was not attended or preceded by severe pain. In addition to this, he gave a distinct history of having observed lumps in the epigastrium for three years, and some of the nodules seemed to be more superficial than might have been supposed if they had been situated in the walls of the stomach. On careful percussion a distinct thrill was felt in one of the most superficial of these lumps, and although he did not complain of any inconvenience in the action of the bladder or the rectum, we discovered an elastic swelling in the pelvis.

The stomach was directed to be washed out with water, and the washings afforded evidence of a long-continued retention of food, but none of carcinomatous ulceration of the mucous membrane. A puncture was made into one of the tumours, and a thin watery fluid was obtained that under the microscope displayed, by the presence of hydatids and hooklets, unmistakable evidence that we had to deal, not with a case of cancer of stomach, but with one of hydatid tumour.

Hydatid cysts of the peritoneum are exceedingly rare, even in London, where tumours of this nature are so often met with in other organs. Thus there are only four described in our post-mortem records in a period during which the details of thirty-seven autopsies of hydatid cysts of the liver are given. It consequently became necessary for me to collect from other sources a sufficient number of examples of the disease to enable us to draw any trustworthy conclusions respecting it.

I have been able to bring together fifty-five cases, in fifty-two of which hydatid cysts were found on post-mortem examination and in three the nature of the tumours was proved by operations performed during life. From these,

along with others that have come under my own observation, I have drawn the conclusions respecting the course and symptoms of the disease I am now about to lay before you.*

You will readily comprehend that, although all hydatid tumours are similar in their structure, the cases are apt to differ in the number of cysts, as well as in the size of the tumours and the rapidity of their growth. I shall, therefore, in order to make the description of the disease more clear and accurate, divide the cases into groups. As in previous lectures, I shall base the divisions on their clinical, not on their pathological features, according to the characters that present themselves to us at the bedside, not on those that are discovered after death. Thus, where only a single tumour has been observed during life, I shall group cases of this kind as "isolated" tumours, but where a number have presented themselves together in the cavity of the peritoneum I shall term them "multiple hydatids," whereas where the abdomen has been distended with fluid, and no distinct tumour could be found, I shall describe such as "peritoneal hydatids of the ascitic form."

1. *Multiple Hydatids of the Peritoneum.*

I have been able to collect thirty-five cases of this form of peritoneal hydatids. The tumours in all were very numerous, but they varied greatly as regards size and position. The cysts were generally round or oval in shape, in one case they are described as varying from the bulk of an orange to that of a filbert, in another from the "size of an egg to that of a pin's head;" in fact, they presented, even in the same subject, the greatest possible variety in this respect. Some contained only a clear liquid, but more generally they enclosed numerous secondary cysts, and some are mentioned as containing pus. The membrane surrounding them was usually soft and white; in some in-

* A number of cases of this description have been collected and published in a thesis by Dr. Gerard.

stances it is mentioned as tough, hard, and leathery, and in a few calcification had taken place.

In twenty-nine out of these thirty-five cases the omentum is stated to have been the chief seat of the tumours; in one the cysts are merely mentioned as attached to the peritoneum without the particular part mainly affected being specified, in one they were adherent to the meso-colon, and in one to the curvature of the stomach; in one the gastro-splenic and in one the gastro-hepatic omentum was the structure from which the greater number of the tumours seemed to arise. In some instances the cysts are described as attached by pedicles to the omentum, and hanging like a fringe towards the pelvis. In one case two cysts were found loose in the peritoneal cavity, probably from the breaking of their pedicles.

You are aware that hydatid cysts are more common in the liver than in any other part of the body, and it was therefore important to ascertain from the collected cases whether, when the peritoneum was the seat of numerous cysts, similar formations could be also confidently looked for in that organ.

Of the thirty-five cases cysts are mentioned as being also present in the liver in twenty-nine, and in the remaining six no mention is made as to the condition of the liver or the other viscera, so that in all probability in any case where there are numerous hydatid cysts in the peritoneum one or more will be also present in the liver. The cysts were in most instances situated at the posterior part of the organ, and in five the diaphragm had been perforated and the contents of the cyst had been evacuated through the lungs. In one empyema had been set up, in another the pericardium had been perforated and suppurative pericarditis had been induced. The gall-bladder or the bile-duct opened into some of the cysts in four of the cases.

The spleen was not so often affected as the liver, but in sixteen cases out of the thirty-five cysts are mentioned as being situated in this organ or in the structures around it.

The pelvis was also a favourite seat of these tumours, for in sixteen out of the thirty-five cysts are recorded in this region, being mostly placed between the rectum and the bladder. When situated in this locality the outer covering seems more apt to become tough and leathery than when they are attached to the omentum.

Cysts are only mentioned in four cases as being also in the lungs, and in one as developed in the pleura.

Details are wanting in many cases as to the immediate cause of death. In some it seems to have resulted from the bursting of the hepatic or peritoneal cysts through the diaphragm, and the consequent lighting up of inflammation in the lungs, pleura, or pericardium, in others from an attack of acute peritonitis or from the pushing up of the diaphragm and the compression of the lungs resulting from it; in one the pressure of a pelvic tumour had produced dilatation of the kidneys, and in another a porsion of the small intestine had become strangulated by a cyst.

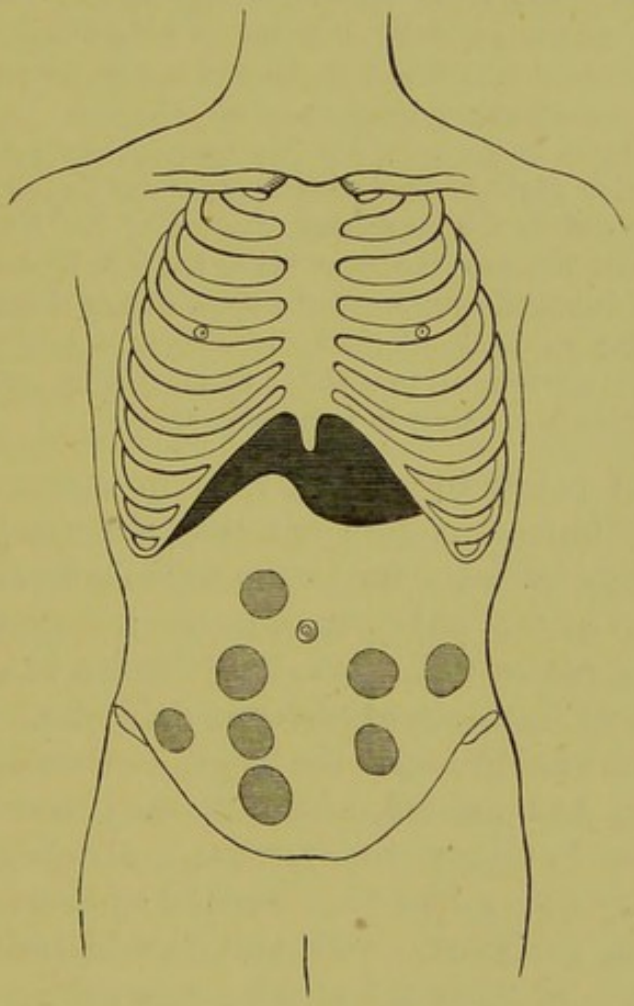
We may then sum up the post-mortem appearances found in these cases by saying that numerous, sometimes innumerable, round or oval cysts are found attached to different parts of the peritoneum, but chiefly to the omentum, accompanied, almost always, by one or more cysts in the liver, and in most cases also by cysts in the spleen or pelvis, and that they terminate life either by producing inflammation of the peritoneum or of the organs of the chest, or by the urgent dyspnœa caused by the forcing upwards of the diaphragm by the tumours below it.

We have now to ascertain the course and symptoms of this form of peritoneal hydatids, and perhaps the best way of doing this will be to read to you the notes of a case admitted into my wards two years ago.

Case 2.—A bootmaker, aged forty-two, was admitted, complaining of loss of flesh, general debility, and a tumour of the abdomen. He stated that his father was alive and in good health, but that his mother had died at the age of forty-four, of abdominal dropsy and jaundice. Five years ago he fell and struck his abdomen, and the medical practitioner whom he

then consulted told him he had injured his liver. He had no jaundice. Eleven months ago he had an attack of indigestion, attended by pain of the epigastrium and excessive flatulence, but the pain was not increased by food. These symptoms shortly disappeared, but returned in about a month's time, and have frequently recurred since then. One month ago he first noticed lumps in his abdomen, but, on being subsequently more closely questioned on this point, he admitted that he had felt a tumour

FIG. 10.—Diagram of abdominal tumours in Case 2.



as long as six years ago, but that it had caused him no pain or inconvenience. Latterly he has lost flesh and has felt weak. There was no history of syphilis or intemperance.

The upper border of the liver, as determined by percussion, began at the upper border of the fifth rib and extended three inches below the costal margin; its surface was smooth and flat. Below the left hypochondrium, and apparently continuous with the left lobe, there was a projecting mass of irregular shape, giving to the finger a sensation of elasticity. There was no increase in the area of the spleen. The abdo-

men was tense and bulging in the flanks, and numerous scattered tumours, varying in size from a walnut to a small apple, could be felt in different parts, but their edges were so indistinct it was difficult to ascertain their exact dimensions. They were smooth, apparently somewhat superficial, and very movable, both with the respiration and by pressure of the fingers (see Fig. 10).

The patient had an enlarged gland on one side of the neck, but none could be discovered in the armpits or groins. The red blood-corpuscles showed no diminution in number, and there was no increase in the number of the white cells. The urine was normal, the temperature normal. The patient gradually increased in weight and otherwise improved in health, but an attempt to aspirate one of the tumours proved unsuccessful, as only a little blood was obtained.

He was allowed to go home, but has returned occasionally, in order that his condition might be ascertained. At one of these visits a distinct thrill was obtained by the percussion of some of the larger and more superficial of the tumours, the mass below the left hypochondrium was found to have increased in size, and the upper border of the liver behind, instead of being straight, had gradually assumed a bulging shape. In all probability, therefore, along with the tumours in the peritoneum, there are also now cysts in the liver in front and behind.

The chief points to which I wish to direct your attention in the foregoing case are that the symptoms were comparatively trifling ; for instance, there were only occasional pains in the abdomen, and the weakness and emaciation were not so well marked, as we are in the habit of seeing in most instances of abdominal disease. In addition to these, you should notice the length of time during which the tumours had existed, and that they were not tender on pressure, but were easily moved, showing that little inflammatory action had been excited by them. We must ascertain, by comparing with this the histories of other similar cases, whether the above was an exceptional case, or whether the features it presented are those ordinarily met with in this disease.

I have collected the histories of twenty-eight cases of this form of hydatid cyst of the peritoneum, exclusive of those that have come under my own notice. In many of them the patient's attention was first attracted by the increased size of the abdomen, unattended by pain or other symptoms of ill-health ; but in two pain of the right

side was first complained of, in three pain of the side and vomiting, in one pain of the side and diarrhœa, in one pain of the side and jaundice, in two pain of the side attended by cough and dyspnœa, in one pain of the abdomen, vertigo and headache, and in one an attack of acute peritonitis ushered in the illness. In two cases an attack of jaundice was the earliest symptom recorded.

The slow progress of the disease, and the absence of local symptoms, were very remarkable when compared with the quickness of growth and the rapid inroads on the general health we are accustomed to see in most other abdominal tumours. Pain is recorded as severe in only three instances, and in one there were attacks of a spasmodic character; frequent vomiting is mentioned as being present in one case, in three there was diarrhœa, in three there was persistent jaundice, but as cysts in the liver almost always accompany those of the peritoneum, it is doubtful whether this last symptom may not have resulted from the entrance of bile into the tumours situated in the hepatic structure rather than into those of the peritoneum. The bowels were obstinately confined in one, and the stools are mentioned as occasionally bloody in one instance. Usually the general health suffered but little for a length of time, and the patients were able to follow their usual avocations.

In eighteen cases I have been able to ascertain the duration of the tumours before the patients were attacked with dangerous symptoms. Of these, only two had first become aware of the presence of the cysts within six months before coming under the observation of the recorder of their cases, and two had suffered from the disease for periods between six and twelve months, five between one and five years, six from five to ten years, whilst three had been affected longer than ten years.

In most instances the onset of dangerous symptoms was sudden. In six severe fever showed itself, originating in the suppuration of some of the cysts, repeated rigors are mentioned as being a prominent symptom in three, and

rapid loss of flesh is recorded in five cases. As might have been expected from the frequency with which the diaphragm was found to be perforated after death by the ulceration of a coexisting hepatic cyst, an affection of the lungs was frequently the immediate cause of death. In almost every instance, whether the lung had been implicated or not, urgent dyspnœa presented itself towards the termination of life, in most cases arising from the pushing upwards of the diaphragm by the abdominal tumours.

Death sometimes takes place from suppuration of the sac and the bursting of its contents through the integuments. I had the opportunity of observing the following case in this hospital :

Case 3.—A man, aged thirty-two, was admitted under the care of Sir Andrew Clark, June 21st, 1870. He stated that three years previously he struck himself just above the umbilicus; only a little soreness resulted from the injury, but one year afterwards he remarked a swelling in the epigastrium, which eventually burst and discharged pus through the umbilicus. On admission a fluctuating swelling, the size of an egg, was observed just above the the navel, from which, in addition to pus, small bodies, the size of a pea, were discharged. His general health, which had formerly been good, was now indifferent, he lost flesh and appetite, and felt himself weak. Temp. 100°. Pulse 86.

July 12th.—The pus was of a fetid character, the patient was weaker, and was losing flesh, and he complained of pain in the epigastric region.

27th.—The swellings in the epigastrium had almost disappeared, but the patient was subject to sickness, and was very feeble.

He gradually sank and died, July 31st.

Post-mortem examination.—There was a sinus near the umbilicus, which communicated with a large suppurating sac in the abdomen ; there were also several abscesses in the abdominal walls, some of which contained hydatid cysts. The large sac was adherent to the under surface of the diaphragm and the liver, pushing upwards the liver and spleen, and reaching below the umbilicus. There were numerous hydatid cysts scattered over the peritoneum, and a small cyst was attached below the right kidneys. The spleen was embedded in old fibroid tissue and contained a cyst. The liver was large and contained a cyst the size of an orange. The diaphragm was pushed upwards, and projecting into the thorax was a soft fluctuating tumour, which was connected with the right lobe, and had partially perforated the muscular structure.

The history of the above case was very characteristic

of these forms of abdominal tumours,—the long continuance of a painless swelling following an injury, but producing neither local disturbances nor alteration in the general health until suppuration occurred, when fever was lighted up, the patient rapidly lost flesh and strength and quickly sank from exhaustion. The projection of the tumour in the liver partly through the diaphragm, which had nearly reached the cavity of the pleura, is also worthy of your notice, for the bursting of a hepatic cyst into the lung or pleura is one of the most common ways by which the life of the patient is terminated.

A case very similar to the above was admitted under Dr. Turner in 1887.

Case 4.—A female, forty-five years of age, was admitted with an abdominal tumour, probably of three years' duration, which burst near the umbilicus during life.

Post-mortem examination.—"Many hydatid cysts in the peritoneum, and pus in the cavity of the peritoneum. There were seven large and small hydatid cysts in the liver, and a cyst as large as a fœtal head behind the left lobe of the organ."

As regards the physical signs in this form of hydatid cysts, the tumours seem to have been generally recognised during the life of the patients; indeed it is difficult for the practitioner to overlook them, on account of their superficial position. A number of separate isolated tumours are stated to have been discovered in ten cases, four tumours in two cases, in two a general swelling of the abdomen is only mentioned, a tumour of "irregular form" is recorded as being present in one. In one a tumour was discovered below the left hypochondrium, two tumours being situated in the same case below the right hypochondrium, in four the cysts are seen to have been located in the right hypochondrium, in three in the epigastrium, in five in the iliac regions and in one in the hypogastrium. Although then the cysts may be found in any part of the abdominal cavity, they are most generally met with in the upper part of it or in the iliac regions. They varied greatly as regards the size they appeared to be during

life ; some are described as equal to an orange, others are likened to a fist, some were similar in shape and bulk to a potato. They were generally readily moved by the pressure of the hand but were seldom tender to the touch ; usually the surface of the tumour was smooth and the shape round or oval. In four cases the tumours are described as fluctuating, but in two it is expressly stated there was no sensation of fluctuation.

On percussion the cysts always afforded a dull note, and "hydatid vibration" is mentioned as being easily felt in different cases. Judging from my own experience, I would say that the so-called "hydatid vibration" is more generally capable of being felt when the cysts are attached to the peritoneum than when they are situated in the liver, and it is as a rule most strongly marked in the most superficial of the tumours.

We have seen in previous lectures that the diagnosis of an abdominal disease can be often determined not so much by the symptoms and physical signs observed in the part primarily affected, as by some coexisting condition of other organs that is apt to accompany it. We must therefore now inquire whether there are any conditions of other structures of the body that are so frequently found to accompany peritoneal hydatids that we may derive assistance from their presence in the diagnosis of these cases. You must, however, bear in mind that it does not necessarily follow that, because we find any certain condition in our post-mortem inquiries, we shall be able always to discover it during the life of the patient.

It was before stated hydatid cysts are always present in the liver when the peritoneum is the seat of these tumours, and that in one half of the cases there are also cysts in the spleen or pelvis. In the histories of the cases I have collected an enlargement of the liver was observed during the life of the patient only in nine, and in two it was so little characteristic of hydatid that the organ was diagnosed as syphilitic in one instance and in the other as affected with encephaloid cancer. The spleen is recorded

as enlarged in only two cases, in three a tumour was detected in the pelvis, and in three others there were symptoms indicating pressure upon the bladder or rectum. Notwithstanding these figures, my own cases have convinced me that, if proper care be taken, indications of a tumour in the liver, especially at its posterior or upper border, or of the spleen, or in the pelvis, can almost always be obtained.

You will remember that an exploratory puncture was made into a cyst in Cases 1 and 2, in the latter only blood was obtained, but in the former the fluid withdrawn showed hydatids under the microscope. Whenever, therefore, the presence of hydatid cysts is suspected this proceeding should be resorted to, as the extraction of the characteristic fluid renders the presence of the disease quite certain.

We may, then, sum up the clinical features of a case of multiple hydatids of the peritoneum as one presenting a number of round or oval tumours in the abdomen, varying in size, superficial, not tender to the touch, usually movable, affording a dull note on percussion, and often giving the "hydatid fremitus" to the fingers. The existence of the tumours is often discovered by accident, and they may remain many years without producing any marked symptoms. In some cases, from their pressure, they set up attacks of colic, vomiting, or diarrhœa; but as a general rule the patient does not exhibit any great emaciation, anæmia, or loss of strength. Indications of coexisting cysts, if carefully sought for, can generally be discovered in the liver, spleen, or pelvis.

Death usually results from suppuration of the peritoneal cysts, the bursting of a hepatic cyst into the lung or pleura, from acute peritonitis, or from the intense dyspnœa produced by the pushing upwards of the diaphragm by the abdominal tumours.

The diagnosis of these tumours often presents considerable difficulty, so much so, that it may be necessary to withhold a decided opinion as to the nature of the case until its progress has been carefully watched.

Some forms of feculent accumulation simulate hydatids of this kind, as they may present separate abdominal tumours, unattended with much pain or tenderness, and unaccompanied by any marked effect upon the general health. They are, however, mostly located in the cæcum or at the hepatic or splenic curvature of the colon; they are irregular in shape, they vary in size from time to time, whereas hydatid cysts are well defined, round or oval, are usually scattered over the epigastric or umbilical region, and only slowly increase in size. The former are rarely quite dull on percussion; the latter are dull, at any rate on light percussion, and often afford the so-called "hydatid fremitus." Fœcal tumours usually admit of being indented by the pressure of the fingers, hydatid cysts feel hard and leathery or elastic; a sharp aperient will frequently alter or remove a feculent accumulation, but has no effect on the size of a cyst. Above all, an exploratory puncture into a cyst will often settle the diagnosis by the removal of a fluid presenting the chemical or microscopical characters characteristic of tumours of this nature.

Peritoneal hydatids are not likely to be confounded with cancer of the peritoneum when they have presented no local symptoms and the tumours have been of long standing; but it may be a matter of great difficulty to diagnose between those affections when the cysts have produced functional changes by their pressure on the stomach or intestines, as in Case 1, or where the general health of the patient has been much affected. Generally they may be distinguished by the small amount of pain and tenderness of the cysts, and by the symptoms produced by their pressure being less severe and less constant, at the same time that the patient does not present the marked anæmia, loss of energy, absence of appetite, and other constitutional symptoms so characteristic of malignant disease. Carcinomatous tumours again are more irregular in their shape, are deeper seated, increase more rapidly and are often accompanied by ascites, enlargement of the liver, or enlarged glands, whilst abdominal hydatids are constantly

associated with cysts in the liver, spleen, or pelvis, and scarcely ever with ascites.

When the cysts are numerous and of moderate size, their shape and mobility may easily suggest the idea that they are enlarged mesenteric glands; at any rate, this is the mistake I have seen most frequently committed. In looking over our post-mortem registers I find that the cases recorded of enlarged mesenteric glands in the adult were usually accompanied by tubercular peritonitis, or were due to lardaceous disease, or lymphadenoma, and we must therefore consider the differences between these and peritoneal hydatids.

In tubercular peritonitis in the adult an enlargement of the mesenteric glands capable of being felt during life is rare, the tumours which present themselves in that disease being generally due to an induration of the omentum forming an irregular mass above or near to the umbilicus. Such a tumour is usually adherent, is tender upon pressure, and is accompanied by ascites or great abdominal distension. In all such cases there is a history of loss of flesh and strength, diarrhœa or constipation are marked symptoms, and the temperature is almost always elevated towards evening. When you contrast these conditions with the well-defined movable tumours of peritoneal hydatids, unaccompanied by pain, fever, or marked emaciation, you will see how unlikely it is the two diseases should be confounded.

I have never seen a case of lardaceous disease in which a general enlargement of the mesenteric glands formed a prominent feature, and the increased size of the liver and spleen are, as a rule, such well-marked features, that any tumours arising from enlarged glands would be naturally overlooked. But in addition to this, the history of the case and the occurrence of dropsy and albuminuria would prevent the possibility of such a condition being mistaken for that of peritoneal hydatids.

Lymphadenoma is the condition that I have seen most frequently confounded with peritoneal hydatids. In

the later stages of the malady, when marked anæmia, hæmorrhages, general enlargement of the superficial glands, and an elevated temperature have become prominent symptoms, there is no chance of a mistake; but if we accept what has been stated by some writers, that the glandular enlargement may commence in, and be for some time limited to, the mesenteric glands, and be accompanied only by an enlarged spleen, it is easy to see how difficult the diagnosis may be if, as in Case 2, along with the movable, well-defined tumours, there is also a mass in the region of the spleen. I have, however, never myself seen an instance in which lymphadenoma was confined to the glands of the mesentery and in such a case the progress of the malady would soon clear up any doubts.

In Case No. 2, which I was at first inclined to regard as one of lymphadenoma of the mesenteric glands, the mass below the left hypochondrium showed by the irregularity of its outline that it was not a hypertrophy of the spleen, whilst the discovery of the hydatid fremitus and the bulging of the upper border of the posterior aspect of the liver confirmed the diagnosis of peritoneal hydatids.

The next case was diagnosed by a distinguished hospital physician as one of lymphadenoma, but when I saw it its nature had become sufficiently evident.

Case 5.—I was requested to visit a lady who was supposed to be suffering from some obscure affection of the lungs. She had, it appeared, observed a number of lumps in the abdomen two or three years previously, which were diagnosed as mesenteric glands enlarged by lymphadenoma, although there was no appearance of enlargement of the spleen or of the external glands of the body. Her general health was at that time quite good, and she had no pain or discomfort in the abdominal tumours. A few weeks before I saw her she was suddenly attacked with what her medical attendant looked upon as pneumonia.

She was at the time of my visit greatly emaciated, was very feeble, and forced to sit up in her bed on account of urgent dyspnœa; the cough was almost constant, and the expectoration profuse and muco-purulent. No physical signs could be discovered at the apices of the lungs, but at the lower part of the right chest behind there was a considerable space, which afforded a dull note on percussion, and mucous râles with diminished inspiration on auscultation. It was evident, therefore, that the

source of the pulmonary irritation was located in the base of the right lung, and taking into consideration the existence of the abdominal tumours, there was little doubt that the pneumonia was the result of a hepatic cyst which had burst through the diaphragm.

The abdominal tumours did not seem to have undergone any alteration of late; they were round or oval in shape, painless, movable, and were scattered all over the abdomen, like those observed in Case 2. There was also a large elastic tumour behind, in the region of the left kidney, which had only lately been observed.

I have had no opportunity of hearing how the patient progressed, but there could be no doubt as to the nature of the case.

In the above case the elastic swelling in the region of the kidney afforded an opportunity not only of giving some relief to the patient, but also of clearing up any doubts that might be felt respecting the case by the removal of the fluid, and in most instances this method of diagnosis may be pursued, as some of the tumours will be usually found to be sufficiently near the surface to allow of their being aspirated. I need scarcely remind you that the fluid of hydatid cysts is clear, watery, of low specific gravity, free from albumen, and usually displays, when examined by the microscope, hydatids or hooklets, characters which will enable you to distinguish the contents of a cyst from those of any other fluid.

The coexistence of fever may, however, give rise in these cases to a difficulty in diagnosis, as the temperature may become elevated if suppuration occurs, or local inflammation has been lighted up by the pressure of the cysts. This difficulty is shown in the following case:

Case 6.—A young man was admitted into my wards with febrile symptoms, and on examining the abdomen two or three tumours were discovered. They were round, somewhat elastic and movable, but were not painful or tender upon pressure, there was also a fulness in the region of the spleen, and careful percussion showed this organ to be considerably enlarged. The patient stated that he had observed the lumps for two or three years, but that the fever was only of a few days' duration.

The temperature remained persistently elevated for about three weeks, diarrhœa was present, and an eruption of typhoid spots showed themselves a few days after the patients' admission.

Two or three weeks after the temperature had fallen to the normal

point there was a fresh rise, the lump in the region of the spleen became enlarged and tender on pressure, and the patient sank from exhaustion.

On post-mortem examination typhoid ulcerations were found in the intestines, hydatid cysts were attached to the peritoneum, and one connected with the spleen was in a state of suppuration.

In the above case the history of the existence of painless, elastic tumours, unattended by any affection of the general health, for two or three years, pointed to hydatid cysts of the peritoneum, but the question to be decided was whether the fever was the result of typhoid, or had arisen from suppuration of the cysts. The slow and gradual onset of the symptoms, the continuous high temperature and diarrhœa indicated typhoid, whilst the absence of pain and tenderness in the tumours and the character of the temperature negatived the idea of suppuration at the time when the patient was admitted. The subsequent appearance of spots on the abdomen confirmed the accuracy of the diagnosis.

2. *The Isolated Form of Hydatids of the Peritoneum.*

Out of the whole number of cases of peritoneal hydatids I have collected, an isolated hydatid cyst of moderate size is mentioned in only seven; of these two were situated in the mesocolon, one between the duodenum and the pancreas, one in the epigastrium, one in the mesentery, one in the umbilical region, and one in the left iliac region. It will be observed that in most of these the tumour was located in the upper part of the abdomen, and this fact may prove of value in diagnosis. But along with the peritoneal tumour there was also a cyst in the liver in four cases, in two there was also a cyst in the spleen, and in one a cyst was found in the pelvis, situated between the bladder and the rectum.

The following case may be useful in imprinting the characters of cysts of this kind upon your minds:

Case 7.—I was requested to see a man who was under the care of my colleague Dr. Sansom, for a tumour of the left side of the abdomen. It was of an oval shape and somewhat elastic, but was not capable of being moved by the fingers. He had no pain, the tumour was not tender to the touch, and his general health was good.

He left the hospital, but shortly afterwards came under the care of a medical man who lived in his neighbourhood, on account of symptoms of peritonitis from which he died. The practitioner kindly informed me that on post-mortem examination he found a hydatid cyst attached to the mesentery and fixed by adhesions to the neighbouring parts, and that this had formed the tumour observed during the life of the patient.

The symptoms and physical signs then of a single abdominal cyst are similar to those contained in the former group. There is the same absence of pain, tenderness, and fever, and the tumour is round or oval, generally elastic, sometimes affording the characteristic thrill on percussion.

You will remember that I pointed out that peritoneal hydatids seem more liable to thickening of their coats and to calcification than those of the liver or other organs. I have seen one or two hard, immovable tumours in the epigastrium, which had been present for a considerable period, and were unattended by local pain or deterioration of the general health, which I diagnosed as hydatid cysts in this condition, but as the patients did not remain under my observation I had no means of ascertaining if the opinion was correct.

I must, however, remind you that tumours of this nature sometimes change as time goes on, so that you may make a mistake in diagnosis in the earlier stage of a case.

The following was a striking instance of this :

Case 8.—A woman, about thirty years of age, was admitted into the hospital under my care with an abdominal tumour attended by constipation of the bowels. A firm, rather hard, and well-defined swelling could be felt to the right of, and at the level of, the umbilicus. On account of its position and firmness I looked upon it as a malignant tumour affecting the colon or the omentum. After a few weeks, however, the patient was observed to have gained flesh and colour, the tumour felt somewhat

softer and had increased in size. As time went on the swelling became still softer, and an elastic part could be made out, so that an aspirator was directed to be passed into it. A large quantity of hydatid fluid was withdrawn, the tumour disappeared, and the patient had experienced no return of the complaint when she was last seen.

It is impossible to say to what structure the cyst in the above case was attached. It may have originated from the under surface of the liver, or it may have been fixed to the omentum, but in the early stage the apparent hardness of its structure was very striking. The case was seen by other members of the staff, and although their opinions differed as to the organ with which it was connected, most of them seemed to look upon it as probably of a malignant nature, and its real character was not suspected by anyone who examined it. It shows how cautious we should be in the diagnosis of abdominal tumours, and how carefully they should be watched if their nature is not made out with tolerable certainty.

3. *The Ascitic Form of Peritoneal Hydatids.*

I have included under this head only those cases in which one or more hydatid cysts attained to such a size as to fill the abdominal cavity and present the appearance of ascites. The clinical features of such cases will be best shown by the following:

Case 9.—A man was admitted under my care, supposed to be suffering from ascites. He stated that a year previously he had received a blow on the epigastrium whilst attempting to lift a boat, and shortly afterwards he observed that his abdomen was enlarged. He complained of neither pain nor tenderness, but the abdomen was greatly distended, and he suffered so much from dyspnœa that I ordered him to be tapped at once.

The puncture was made between the umbilicus and the pubes and a thick fluid of an olive colour was evacuated. After the fluid had ceased to flow it was found that the upper part of the abdomen was still distended, and consequently a trocar was introduced above the navel, and a large quantity of fluid of a reddish brown colour was removed. The patient experienced great relief from the operation, but in a few weeks the fluid again began to collect. I requested my colleague, Mr. Treves, to see the

case, who opened the abdomen and evacuated a large amount of hydatid cysts, along with a quantity of fluid.

Numerous cysts escaped through the wound from time to time, but eventually it healed, and the patient was restored to his former state of health. He has since frequently reported himself as remaining in good health, and being free from any abdominal trouble.

From two separate punctures being required, and from the liquid withdrawn from the openings being of a different colour, it is evident that this patient was affected with two cysts unconnected with each other, and also that the contents of the biliary passages had obtained an entrance into both. I need scarcely, however, point out to you how different in its clinical aspect this case was from those included in the previous groups.

Ten cases of a similar character to the above are to be found in the collection of peritoneal hydatids I have made. In five only a single cyst was discovered on post-mortem examination, and in one it is noted that two tumours occupied the whole abdominal cavity. The cysts were almost always adherent to the parietes, which is not common when there are a number of small cysts attached to the peritoneum. In three the contents of the cysts are stated to have been in communication with the gall-bladder or ducts as in Case 9. The walls of the cysts are noted as being much thickened in one instance, and in two suppuration of the contents had taken place.

In only four out of ten cases cysts are mentioned as being also present in the liver, in two cysts were also present in the spleen, but in five cysts were discovered in the pelvis.

In one case death had resulted from acute peritonitis, in two empyema was present, and in one death was caused by the compression of the lungs produced by the pushing upwards of the diaphragm by the distension of the abdomen. The transverse colon was enormously dilated in one instance.

Cases of this class therefore differ from those we have previously examined, not only in the small number of tumours and their greater bulk, but also in their being accompanied more frequently by cysts in the pelvis than in the liver.

The histories are given with more or less detail in nine out of the ten cases.

The presence of a swelling of the abdomen, unattended by pain or soreness, was the first symptom that attracted the attention of three of the patients ; in one the disease was ushered in by pain of the abdomen attended by severe diarrhœa, in one it was attributed to an injury. It has often been remarked that a hydatid cyst has made its appearance shortly after an injury to the locality which it afterwards occupied, but it has not been determined whether the injury has any effect in favouring the development of these tumours. I think it most likely that, as the growth of the cyst usually takes place without pain or uneasiness, the patient in such instances attributes it to an injury as the only cause he can imagine as likely to produce the swelling.

In the account of the subsequent symptoms severe pain of the abdomen is only mentioned in one case, there was loss of flesh in three, in one hæmatemesis is recorded, but generally there was the same absence of pain, tenderness, local disturbances, and fever as in the cases included under the groups we have already examined. Dyspnœa was almost always present, and was generally a prominent symptom.

Where the physical signs are mentioned, the general distension of the abdomen is the most prominent. The tumour is stated in one instance to have been distinctly fluctuating, in one as being apparently divided into two parts, in another as being chiefly confined to the hypogastrium. In one it is expressly mentioned that the percussion note was clear in the flanks, but in most of the histories careful details as regards the physical signs are not given.

The duration of the disease is mentioned in five cases ; in three the swelling had been remarked for many years, in one for nine or ten years, and in one it had been observed for only one year before the patient came under medical care.

Cases of this form of hydatid cyst are stated to have been mistaken for pregnancy, for ascites, and for ovarian tumours.

There is not much probability of a hydatid cyst being confounded with pregnancy if ordinary care be employed; the points of difference are so numerous and evident that nothing but gross carelessness could account for such a mistake.

A careful examination will always prevent such a case being mistaken for ascites, as the fluid in the latter gravitates with every change in the position of the patient, whilst in hydatid, as in other cysts, the dull line on persion remains the same in whatever posture he may be placed. In addition to this there will be the absence of the conditions that ordinarily produce an accumulation of fluid in the peritoneal sac, such as disease of the liver, of the heart, or of the kidneys.

There is, however, a great similarity in the appearance and symptoms of a large hydatid and of an ovarian cyst, as both consist of fluid enclosed in a sac, and both may produce but little injurious effect on the general health and no local disturbance, excepting such as is caused by the pressure of the tumour. When a history can be obtained, the first appearance of an ovarian tumour is always from below, whilst in a considerable number of cases the hydatid cyst presents itself in the upper part of the abdomen, and the nature of the latter may be often further suspected if good evidence of a cyst in the liver or spleen can be obtained. In any doubtful case a puncture will settle all difficulty, as the fluid removed will present the characters of the cyst in which it was contained.

However the cases of peritoneal hydatids may vary in their clinical characters their treatment must be conducted on the same principles. Experience has amply proved that no drug we possess has any effect in preventing the growth of these cysts, or in dispersing them when once formed, so that we have only to look to surgical measures to combat them.

The methods of treatment generally employed are either to empty the cysts by puncture or to open the abdomen and remove their contents, and it must be left to the judgment of the surgeon to determine which plan he considers most suitable in each case. As a general rule, I think it is better to tap the tumour in the first instance, as we not only are able in this way to settle any doubts as to the diagnosis, but in some cases this simple procedure, as in Case 8, suffices to remove the disease.

The hydatids in Case 1 were successfully treated by incision, and in various other instances that have been published vast quantities of cysts have been removed in a similar way from the abdomen. But we must ever bear in mind that in almost every case there are also cysts located in the liver, spleen, or pelvis, and that these have also to be dealt with, even if we are successful in clearing the peritoneal cavity. The operations seem to have been more successful in the ascitic form, probably because in cases of this kind there is less chance of the co-existence of cysts in the liver or spleen.

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