Extensive gummatous lesions of the liver, diaphragm, lung, and spleen / by Sheridan Delépine and Richard Sisley.

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Extensive gummatous lesions of the liver, diaphragm, lung, and spleen.

By Sheridan Delépine, M.B.Edin., B.Sc.Lausanne; and Richard Sisley, M.D.Lond.

Preliminary Remarks.—We are indebted to Mr. Rouse for permission to publish this case, and to Mr. Bull for the use of his excellent clinical notes.

I. *History.*

The patient had been a police constable. His age was 43. He gave no history of heritable disease.

In 1861, *i. e.* twenty-five years before death, he suffered from gonorrhœa, from which he completely recovered. Some months afterwards he had a chancre, followed by a bubo in the left groin; this was opened. Later the man had sore throat.

In 1864 a swelling formed over his right tibia; this gradually increased in size.

The patient continued to serve in the police force till 1871, when he lost power in his left arm and leg. He was under treatment for eleven weeks, and recovered sufficiently to do his work again till 1876, when he had another attack of paralysis in his left leg and arm. He was then superannuated from the police force. From 1876 he "dragged his leg" when he walked. A month before he came to St. George's his right leg began to swell.

The patient took little alcohol.

His wife had had four miscarriages, and had borne no living child.

The man came into the hospital February 1st, 1886. He then complained of swelling in the left leg and of inability to walk.

Lung: On the right side of the chest, dulness commenced at the upper border of the fifth rib.

Liver: Hepatic dulness extended downwards about two inches below the ribs, and to the left side as far as the spleen. The hepatic surface felt quite smooth.

Spleen: In the left hypochondriac region there was a nodular mass which extended downwards to the crest of the ilium.

Leg: There was much thickening of the left tibia at its upper third. There was an ulcer on the inner side of the left leg.

Urine: No albumen; sp. gr. 1020, clear, neutral.

Whilst under observation the patient suffered much from bronchitis and epistaxis.

A rupial eruption appeared in his left leg. On March 18th erysipelas commenced at the seat of the eruption, and spread upwards.

Bedsores formed over the man's sacrum, he became delirious, and died on March 20th, 1886.

II. *Post-mortem Examination.*

The autopsy was made twenty-three hours after death.

1. *External appearances.*

The height was six feet, the body thin, the hair dark and grey. There were bedsores over the sacrum and over the great trochanter of the femur. There were some scabs on the right leg, on the inner side of the right foot, and on the inner surface of the left leg.

2. *Thorax.*

The left pleura contained about three quarters of a pint of straw-coloured fluid. There were adhesions on the right side, at the axillary border posteriorly, and below to the diaphragm.

The *left lung* weighed 3 lbs. 4 oz. There was a deposit of inflammatory lymph on the visceral surface of the pleura. The lower lobe was deeply congested and partly consolidated; the consolidation was in patches as in catarrhal pneumonia. Some of these masses looked as if they were purulent, some fatty or caseous. The largest measured 3 mm., the smallest barely ½ mm. Each patch or nodule was surrounded by a deeply congested zone. Immediately under the pleura there was a network composed of

ramified tracks, having an appearance similar to that of the smallest of the patches in the lung. The appearance suggested lymphatics distended with cells or some fatty products. The surface of the pleura itself was puckered, the depressions being filled up with lymph. Between the catarrhal patches the lung parenchyma was apparently simply congested and œdematous, and in places emphysematous. The emphysema was most marked along the anterior and lower borders of the lobes. In many places there were small hæmorrhages. The bronchi were full of muco-pus.

Microscopical examination of the left lung.—Under the microscope the lobular or patchy character of the consolidation was very distinctly seen in some places, whilst in other parts larger tracks were found to be occupied continuously by exudation. The general congestion was very evident. When the lesions were examined in detail the following points were found.

(*a*) *The pleura* was covered with recent lymph containing very few cellular elements, but on the immediate surface of the serous coat there was an almost continuous layer of epithelioid cells, evidently the result of an active proliferation of the pleural endothelium. The subserous layer of the pleura was unevenly thickened, its blood-vessels and its lymphatics considerably enlarged, especially the latter. Where the fibrous tissue was in excess it was composed of very clear bundles of white fibrous tissue of homogeneous appearance, and with comparatively few cellular elements. This tissue was at places much infiltrated with carbon. The interlobular and interalveolar septa were similarly affected, and some of them were much thickened. The distended lymphatics corresponded to the yellow patches and ramified tracks already described. They contained chiefly cells, among which it was possible to recognise here and there lymphatic corpuscles, red blood-corpuscles, and a few large fatty cells. In most parts there was an imperfect network of degenerated fibrine, granular *débris*, and small rosettes of crystals of doubtful nature; similar patches were found all through the lung, but more specially round vessels of medium and large size—that is to say, in the perivascular portions of the interlobular septa. Notwithstanding the large size of some of these masses they did not seem to press on the vessels. The peribronchial tissue was not affected in the same way. Some of the masses came in contact with the walls of some of the bronchi, but this was owing to proximity of the latter to the vessels.

(*b*) *Blood-vessels.*—The chief points worth noticing besides the intense congestion and distension of the perivascular lymphatics already alluded to was the presence of an unusual number of leucocytes, rounded cells of granular appearance larger than leucocytes, and in some places a large number of small nucleated corpuscles, forming here and there small clumps within vessels the endothelium of which was in a state of proliferation and desquamation. In many places the blood was coagulated, and in one or two instances cells infiltrated with carbon seemed to have penetrated into the lumen of the vessel. There was a certain amount of thickening of the intima of some vessels, in others there was no thickening.

(*c*) *Bronchi.*—Some of the terminal bronchi were dilated, others contracted; they were generally filled up with catarrhal products.

(*d*) *The alveoli and alveolar passages*, like the terminal bronchi, were either dilated or reduced in size by pressure. Those which were dilated were either empty and emphysematous, or more frequently filled up with blood, granular *débris* (products similar to those found in the lymphatics), and catarrhal pigmented cells. Whether the alveoli were dilated or contracted, empty or filled with exudation, their walls were in most places congested, and lined with prominent epithelium in a state of proliferation. In addition to the products mentioned above, amyloid bodies were found in a few of the alveoli. No lardaceous reaction was obtained in the organ.

Right lung.—The upper lobes of the right lung were very much in the same state as the upper lobe of the left (the lower parts of these two lobes were slightly invaded by the cheesy mass). The lower lobe, in addition to changes similar to those observed in the left inferior lobe, was completely adherent to the diaphragm, displaced upward and partly destroyed by an extension into its substance of a large caseous mass which occupied the upper part of the liver, and replaced the parts of the diaphragm which separated the lung from the liver in that region.

At the upper margin of the caseous mass there was much fibrous induration and exudative consolidation of the pulmonary tissue; in the cheesy mass itself the limits of the base of the lung were indicated by a large amount of carbon pigmentation.

The whole lung was in a state of intense congestion, and indurated to a greater extent than the left lung. There was a small amount of emphysema. The bronchi were thickened.

Microscopically.—The only parts which call for special description are those adjoining the caseous mass, where the lesions found may be summed up as follows:

There was considerable fibrosis, due to extension of the connective tissue forming the margin of the cheesy mass along the interlobular and interalveolar septa; but where the tissue formed large tracts it was found very vascular, and to contain patches of round-cells smaller than ordinary leucocytes. The nuclei of the cells stained very deeply. In order, however, to give a clear idea of the changes observed it will be convenient to admit the existence of three zones at the margin of the caseous mass.

1st. Zone where the lung parenchyma had retained its characteristic features.

2nd. Zone where the structure of the organ could still be recognised in some places, but was so altered that it could only be made out by tracing the continuity of its parts with those of the first zone.

3rd. Zone where no trace of lung structure could be found.

In the first zone the changes were similar to those observed in the left lung. There was, however, no marked distention of the lymphatics, and exudative changes were almost entirely absent. The chief lesions were those produced by chronic interstitial inflammation, or in other words, fibrous induration. Catarrhal changes were present here as in the other lung; congestion was well marked; the blood contained an excess of leucocytes, and especially of small nucleated corpuscles. There was also in many parts abundant desquamation of the endothelium. It was in the *second zone* that the most interesting and typical changes were observed. There the increase of fibrous tissue was so great that the alveolar cavities and the bronchial and alveolar passages occupied less space than the interstitial tissue. This altered the appearance of the parenchyma so much that, except for the direct continuity of these cavities with those found in the upper zone, it would have been impossible to recognise the nature of the organ. The new connective tissue was very cellular, and was chiefly composed of spindle and branched cells, in the midst of which were aggregations of small lymphoid cells (similar to the small nucleated corpuscles found in the blood-vessels). Among these cells there was much carbon pigment. In some places the cellular connective tissue projected into the neighbouring alveoli in the shape of small polypoid

masses. The terminal bronchi were much stenosed, owing to the new formation of connective tissue in the mucous, submucous, and peribronchial coats. Owing to this increase of interstitial tissue the muscular layer was much atrophied. There was almost complete obliteration of nearly all the alveolar passages and alveoli. The walls of a large number of these contracted passages and cavities were covered with small cubical or columnar epithelium, which was in a state of proliferation. Some alveoli contained large, pigmented and non-pigmented, catarrhal cells which entirely filled up their cavities. In addition to these cells small lymphoid corpuscles were found, and there were large multinucleated cells, which resembled giant-cells in structure and shape, but differed from them in being found free within the alveolar cavities. *The similarity between the lesions just described and those found in the pneumonia of inherited syphilis is very striking.*

In the *third zone* no trace of lung tissue could be discovered. The only evidence of the previous existence of any such structure in that region was the presence of a few patches of carbon particles, but even these were not abundant. The chief feature of the tissue found in that zone was its dense and lamellated appearance. It was composed of clear homogeneous layers of fibrous stroma, separating small flattened corpuscles which stained deeply. In some places there were small aggregations of lymphoid cells, which also stained deeply. This was the tissue which became gradually caseous. This was well shown by the gradual disappearance of the nucleated cells and the degeneration of some of the tracks of lymphoid cells, some of which seemed to acquire a considerable size. Thus although the caseous mass covered part of the area normally occupied by the lung, yet it could not truly be said that it was formed in the lung tissue itself. It was produced in the fibrous connective tissue which had taken the place of a certain portion of the pulmonary tissue.

The larynx and trachea were congested.

Heart.—There was an excess of fat in the course of the coronary arteries. The cavities of the right side of the heart contained a light-coloured clot. The edges of the mitral and tricuspid valves were slightly thickened; so were the attached margins of the aortic and pulmonary.

The aorta contained some small patches of atheroma.

3. *Abdomen.*

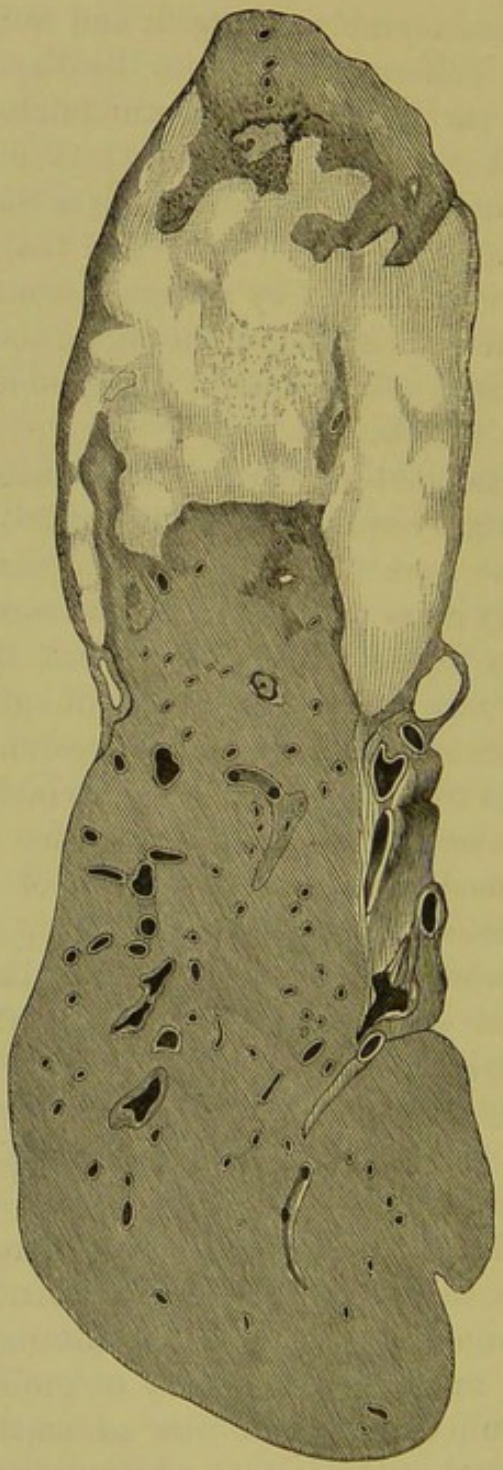
The peritoneum was healthy.

The spleen was considerably enlarged, and weighed 2 lbs. 6 oz. The upper half was adherent strongly to the diaphragm, and after removal the surface part of the organ was nodulated, puckered, and covered with a thick capsule, roughened by torn dense fibrous adhesions. The lower half of the organ was less nodulated, and its capsule was thinner. On section it was found that nearly the whole of the upper third was replaced by a large caseous mass extending from the hilum to the outer surface of the organ, and presented somewhat the appearance of a large infarct due to obliteration of some of the main splenic vessels.

A more minute examination showed that whatever share a vascular obliteration might have taken in the production of the lesions, something else must have been the essential causal agent. The margin of the cheesy mass was nodulated, and some of the nodules were almost entirely separated from the rest of the mass. In the midst of the cheesy area there were patches of splenic tissue which had retained to some extent their normal appearance. The capsule was distinctly raised over the diseased mass, which was surrounded by a dense very vascular capsule, continuous with the greatly thickened and almost cartilaginous capsule of the organ. On looking into the mass itself it was evident that it was composed in great part of fibrous tissue, forming trabeculæ which separated nodules in a state of cheesy degeneration. Small gummata were found in the thickened capsule in the neighbourhood of the main mass of gummata. The whole substance of the spleen itself was indurated, so that a considerable amount of general interstitial changes was evident.

Microscopically the following lesions were found:—(1) General increase of fibrous tissue. This was most marked in the parts surrounding the large cheesy mass. (2) Distension of the vessels of the pulp. (3) Small accumulations of proliferated cells originating in the pulp-stroma, and also of small lymphoid cells similar to those found in the lungs and liver. (4) Thrombosis of many small vessels. The margin of the large tumour had the same characters as those of the tumour found in the liver. The central parts were, however, more cellular and more distinctly nodulated in the spleen than in the liver. The presence of these

FIG. 1.



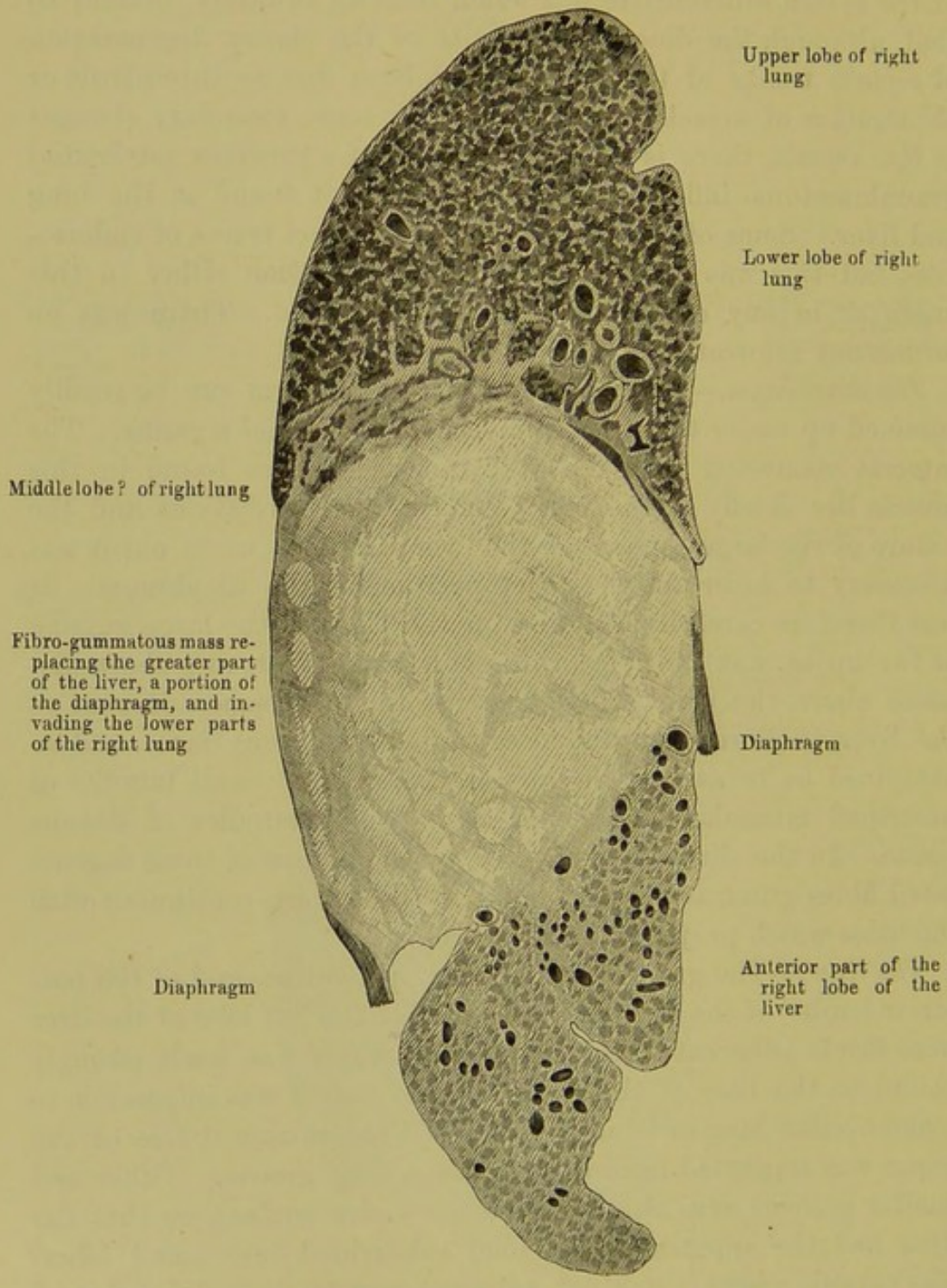
Median section of the spleen, showing a large gummatous mass in its upper part. Reduced to about two thirds natural size. From a sketch by Sheridan Delépine.

nodules and the imperfect subdivision of the mass by fibrous tissue bands differing in every respect from the ordinary trabeculæ of the spleen differentiate this lesion from an ordinary infarct; so that, although the determining cause of the cheesy degeneration of certain tracks of tissues may have been due to thrombosis or obliteration of vessels brought about by some secondary changes in the vessels, there is distinct evidence of a previous interstitial granulomatous inflammation similar to that found in the lung and liver. Some of the arteries showed distinct traces of endarteritis, but this was far from being a general lesion either in this organ or in any of the other organs examined. There was no lardaceous infiltration.

The diaphragm.—The lesions of the diaphragm can be readily summed up under the title of *gummatous interstitial myositis.* The interest connected with the study of the lesions found in this muscle lies chiefly in the fact that before the relations and the nature of the large gumma of the liver could be made out it was necessary to ascertain the exact position of the diaphragm. It was therefore carefully followed on the sides of the large gumma as far up as was possible; the result being that, at a short distance above the point where the diaphragm became adherent to the liver, its fibres were found separated by fibrous tissue, and so atrophied as to assume the appearance, first, of small bundles of unstriped muscular fibres; and secondly, of bundles of fibrous tissue. In the direction indicated by the course of these degenerated fibres gummata were found, and these were continuous with the mass which projected into the lung.

The liver.—The greater part of the upper surface and of the posterior border of the right lobe and part of the left lobe of the liver were firmly adherent to the diaphragm, which was itself strongly bound to the base of the right lung, so that it was impossible to remove either lung or liver by itself. What remained free of the organ was separated from the rest by a deep groove. Other and similar grooves were also found on the under surface, so that the liver had the appearance of being subdivided into small lobes. The capsule where it was not adherent was finely nodulated, and looked more dense and more opaque than normal. The gall-bladder was of moderate size and apparently healthy. On section the hepatic tissue looked pale, although it was very vascular. The fibrous tissue was distinctly increased in amount; the periphery of

FIG. 2.



Gummatous infiltration of the liver, diaphragm, and right lung. An antero-posterior vertical section, reduced about half the natural size. From a drawing by Sheridan Delépine.

the lobules was pinkish grey in colour, and translucent at the margin; the centre was nearly opaque and of brownish-red colour. This description applies only to a small part of the organ.

In an antero-posterior vertical section passing in the region of the mammary line the following arrangement was seen. (For the sake of brevity, only what can be seen in that plan of section will be described, but many other sections have been examined with the same general results in every case.)

The upper two thirds of the liver were replaced by a rounded yellowish mass, measuring 14 cm. by 11 cm. (*i. e.* about 5½ inches by 4¼ inches).

This mass was composed almost entirely of cheesy matter and fibrous tissue. It had a dense, almost cartilaginous capsule, which was on the upper and posterior surfaces adherent to the diaphragm or to the lung, whilst inferiorly it formed a sharp boundary layer between the cheesy mass and what remained of the liver. It was in the region of the surface of the organ corresponding to that capsule that the deep groove mentioned in the general description was found. The capsule was continuous with trabeculæ of fibrous tissue which passed into the substance of the caseated mass. These trabeculæ enclosed rounded spaces occupied by gummatous nodules.

By coalescence of these nodules the spaces between the trabeculæ became large in the central parts of the mass. There was more fibrous tissue at the margin than in the centre of the tumour. The latter region was much softer than the peripheral part. In the portion of the capsule intervening between the large tumour and the less diseased part of the liver several small typical gummata were seen. In the midst of the fibrous tissue composing the trabeculæ several calcareous nodules were found; these were chiefly composed of carbonate of lime.

Microscopical examination.—That part of the organ which retained the naked-eye appearance of liver tissue was found microscopically to be more than half replaced by connective tissue. This tissue extended everywhere along the vessels, arteries, veins, and capillaries. In some places small aggregations of lymphoid cells were found. In many lobules there remained but slight traces of the liver epithelial columns. In others these columns had resumed the tubular appearance so typical of intra-lobular cirrhosis. It can be said that there were hardly any lobules where such changes were not visible, and that in most places they had reached such a

degree as to render it probable that the parts so affected had become physiologically impotent. The large cheesy mass presented under the microscope all the appearances which the naked-eye characters suggested.

The *kidneys* weighed 18 ounces; the capsules were not adherent the substances were congested.

The *bladder* was slightly congested.

4. *Cranial cavity.*

Brain.—There was an excess of fluid in the subarachnoid space and in the ventricles. The brain substance was rather soft. No other abnormality was noticed, but the organ was not examined very minutely.

5. *Skeleton.*

The tibiæ were thickened. The anterior border of the right presented an irregularly convex surface; the point of greatest prominence was about the centre of the shaft of the bone.

The compact part of the shaft was considerably thickened, and the medullary cavity was nearly obliterated by cancellous tissue. The cancelli immediately posterior to the compact bone of the anterior border were flattened and elongated. The posterior walls were slightly thickened. The external and internal surfaces were irregularly nodulated.

III. *Discussion of the case.*

In this case it appears that the liver was affected with syphilitic deposits; the diaphragm was then involved, and the lower lobe of the right lung was compressed by the new growth which finally involved the pulmonary tissues. We have searched the 'Transactions of the Pathological Society' for a like case, but have failed to find one altogether similar. The earlier volumes of the 'Transactions' contain no reference to syphilitic visceral disease, and it may be of interest to remind members that cases of syphilitic disease of the liver, lungs, and spleen were first brought before the Society by Dr. Wilks. The first case of hepatic syphilis is recorded in vol. viii, p. 241 (1856–7); this was a case of cirrhosis; and the first cases of syphilis of the lungs and of the spleen were recorded in the years 1857–8 and 1860–1 (see 'Path. Trans.,' vol. ix, p. 55, and vol. xii, p. 216). The only case found in which

it is mentioned that the diaphragm was affected is recorded in vol. xiii, p. 250.[1]

In this case the gumma apparently originated in the diaphragm; it therefore differs from the one we record.

A liver strongly resembling the one we have just described was brought before the Society on April 16th, 1889, when Mr. M. Targett showed a specimen he called "Diffuse Calcification of the Liver" ('Trans. Path. Soc.,' vol. xl, p. 123). The liver weighed 66 oz. The capsule was thickened, especially over the left border of the organ. Sections could only be made with a saw. The greater part of the liver substance was replaced by fibrous tissue, which was infiltrated with calcareous deposits. A report was made on the specimen by Dr. Sharkey and Mr. Eve. These gentlemen considered that the disease was of syphilitic origin, although there was no history of syphilis. In his report Dr. Sharkey refers to a case he had shown, and of which there is an account in the 'Transactions of the Pathological Society,' vol. xxxiv, p. 118.

In Dr. Sharkey's case there was no history of syphilis. The liver weighed 6 lbs. 7 oz.; the surface was nodulated; there was much fibrous material near the capsule, and nearer the centre of the organ there was a small-celled infiltration, and numerous gummata also were present. A committee consisting of Dr. S. Coupland and Dr. J. F. Payne confirmed the diagnosis of syphilis.

This case is not only of great interest owing to the unusual extent of the lesion, but also on account of its very clear syphilitic history. There is not only distinct evidence of the existence of a primary syphilis twenty-five years before the death of the patient, but the man subsequently suffered from all the more usual secondary and tertiary complications. The lymphatic glands, the throat, the skin, and the bones were all affected in the usual way, so that there can be no doubt that the case was one of syphilis. This is entirely confirmed by the nature of the lesions found *post mortem* in the liver. These lesions, although of remarkable size, had all the usual characters of syphilitic lesions.

There is often much doubt as to the syphilitic origin of lesions

[1] "About the middle of the posterior margin of the right lobe was a knotty tumour about the size of a large walnut, apparently growing from the capsule. . . . . Another similar deposit, the size of half a large orange, was embedded in the substance of the diaphragm, and projecting downwards established an inseparable connection between the left lobe of the liver and spleen."

such as those we describe in the lungs. In this case, to doubt the nature of the pulmonary changes is practically impossible. We have not only a distinct syphilitic history, and lesions of an unusual nature, but in addition we find that there is a continuity between the typical hepatic lesions and those of the lung. One thing, however, is evident, namely, that although this is a case in which the inflammatory changes had a great tendency to the production of gummata, yet only those parts of the right lung which have come in contact with the liver through adhesions have become gummatous, and that only after having been first entirely replaced by fibrous tissue. From this it seems evident that in searching for evidences of syphilis in the lung one must be careful not to attach too much importance to the presence of gummata having characters similar to those found in solid organs, and that one should rather look for lesions such as those which in our case were present in the left lung—that is to say, lymphangitis, interstitial and catarrhal pneumonia, bronchial stenosis, and bronchitis, and the usual complications of those states. We are therefore able to confirm partly or entirely the observations of Ricord, Dittrich, Gubler, Wilks, Vidal, Virchow, Lancereaux, Coyne and Cornil, Maunoir, Malassez, Maunoury, Rindfleisch, Moxon, Payne, &c.

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