A lecture on chronic and tuberculous mastitis : being a portion of the Hunterian lectures on 'Certain diseases of the breast' delivered before the Royal College of Surgeons of England / by Henry B. Robinson.

With the writers Compts

A LECTURE

ON

CHRONIC AND TUBERCULOUS MASTITIS.

BEING A PORTION OF THE HUNTERIAN LECTURES ON
"CERTAIN DISEASES OF THE BREAST."

Delivered before the Royal College of Surgeons of England.

BY

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A LECTURE

ON

CHRONIC AND TUBERCULOUS MASTITIS.

I.—Simple Chronic Mastitis.

The first form of chronic inflammation we shall consider is that associated with no specific infective organism, but is in connection with a local cause, and its development is as a rule a localised one. In a great many of the cases suppuration takes place, and from this being embedded in the breast substance it leads to great perplexity in diagnosis. It is usually termed the "chronic encysted abscess." As many pathologists hold that the presence of a chronic abscess not due to "tubercle" is an anomaly, the *locus standi* of this chronic abscess may be questioned. But I think we must recognise that in the breast we have an exception, and that this chronic inflammatory affection is only in relation with local causes.

Its causation is in most cases due to lactation. It may occur towards the end of a period of active lactation, or more especially after weaning; it may also develop after abortions or miscarriages. Thus it agrees with acute mastitis, but differs markedly from it by its chronicity of development. It is difficult to say how early we should class a case of mastitis as chronic; certainly only if it has existed for several weeks. Tillaux makes an intermediate class of "cool abscess" for those in which there is doubt. It has been noticed that indurations left after a previous lactation may suppurate at a subsequent confinement. Bryant considers that lactation is only occasionally a cause.

Injury may be a cause, and suppuration is not nearly so frequent as in that due to lactation, if it occurs at all. From a blow we may have a small localised induration from the first, which may persist for an indefinite time, but loses its tenderness. A hæmatoma after absorption may leave such an induration. Lucas-Championnière considers that the pressure of stays is responsible for some of these inflammatory swellings, but there is no evidence that they occur more frequently at the lower part of the gland.

The clinical forms and their course are subject to great variation. As the lesion occurs in relation with lactation it will be found towards the end of that period or after weaning that one lobule of the gland becomes a little painful, hard, and with well defined outline towards the periphery of the breast. The skin will be quite free over it, but on pressure deep tenderness may be elicited. This may remain *in statu quo* for an indefinite time, ultimately undergoing absorption so complete that resolution has taken place. In the next group we find that the inflammatory infiltration remains behind as an induration which has lost the deep-seated tenderness, and may practically become permanent. It is probably to this class that some of the cases described by Sir Astley Cooper as "chronic mammary tumour" belonged, namely, those that became absorbed during a subsequent pregnancy and lactation. Although he applied the term to fibro-adenomata, it is difficult to suppose that these firm fibrous tumours did become absorbed under the same circumstances. The usual sequel is for the nodule slowly to enlarge, involving more breast tissue at its periphery. It still however maintains a fairly defined outline, and may be of a somewhat oval form with its axis directed to the nipple. This increase in size may be attended by very little or no pain, but the tenderness on deep pressure, a symptom laid great stress upon by Sir Astley Cooper, will be increased. The size it reaches varies very much. When deeply placed, especially if towards the periphery of the gland, there will be no adhesion of the skin and no retraction of the nipple, and the mass may have a cake-like feel suggesting a tumour. Castex and Réclus comment upon its rounded margin and say that this sign is absolutely diagnostic; other observers, however, are not at one with them on this point. It may be distinctly made out that the lump is part and parcel of the breast substance. Should the inflammation be central and yet deeply situated, the nipple will be very likely retracted, owing to the dragging on the ducts passing through the inflammatory mass. It may now remain deeply placed in the gland, but yet soften in the centre without there being any œdema or adhesion of the skin over it; the tenderness will possibly be more marked, but the fluctuation cannot here be obtained owing to the extreme thickness of its walls; these are the cases leading to the suggestion of a solid tumour. If the inflammatory swelling comes nearer the surface there may be œdema and some skin adhesion, but redness is quite the exception. Fluctuation may now be detected, and if the mass is not incised the skin may at last give way, setting free a thick creamy pus, but without any caseous particles in it. The glands in some cases may enlarge, but this is rare. Lucas-Championnière quotes a case where the axillary glands enlarged with one of these indurations and suppurated, without any change taking place in the lump in the breast. Réclus noticed suppuration to ensue after an indurated nodule had been quiescent for six years. Abscesses may be multiple and may intercommunicate by small openings causing complete riddling and disorganisation of the gland, or may remain quite isolated from each other, as in the following case:

E. A., 37, married. Swelling of the right breast was first noticed nine months before, after leaving off suckling. There were two oval fluctuating swellings at the outer side of the gland towards the periphery; they

were tender but not painful; they were closely adjacent and did not communicate. The interstitial tissue round was thickened. On incision they proved to be two smooth-walled abscesses containing thin pus.

The above remarks refer almost entirely to those cases the result of lactation. When injury is the exciting cause suppuration is unusual. That such does ensue from time to time is shown in the following quoted by Velpeau :—

A woman, aged 52, received a blow on the right breast. Six months after she noticed a lump the size of a nut. This did not subside with treatment. Fourteen months after the injury the breast was as large as a full-sized fœtal head. The surface of it was slightly irregular, though the skin did not seem to be affected. It was globular. There had never been any acute pain. Owing to an error in diagnosis, the breast was amputated on the idea of its being a tumour, when, on section, a simple abscess cavity was exposed containing thick pus.

The diagnosis has to be made—

1. *From a Localised Nodule of Chronic Interstitial Mastitis.*—A consideration of the cause may help us, for whereas the disease under discussion is usually met with in relation with active changes in the gland, the interstitial disease occurs mostly about the period of involution. The nodule of interstitial mastitis has never adhesion or œdema of the skin, and has not the characteristic tenderness. The other breast should be examined, for a lesion in the opposite breast is practically confirmatory of chronic interstitial mastitis.

2. *From Tuberculous Mastitis.*—In both this and the simple mastitis we may have œdema and adhesion of the skin, but in tubercle we have the margin not so well defined; we should expect less tenderness, and we should have glandular enlargement as a more constant feature. The characters of the pus on incision will differ, as in tubercle it contains cheesy masses, whereas in the simple chronic abscess it is thick and creamy. A history of recent lactation favours the simple mastitis, but a history of tubercle in the family may establish the diagnosis as the tuberculous form.

3. *From Tumours.*—Unfortunately errors in diagnosis have led to the sacrifice of the gland on the supposition that a solid tumour was being removed. Perhaps it can be more often confused with an ordinary scirrhus, especially if the inflammatory swelling be accompanied by glandular enlargement, as in both we may have a localised hard tumour following a blow, with adhesion of the skin and retraction of the nipple. Sir Astley Cooper describes two very well-marked cases where patients were sent to him with hard tumours in the breast supposed to be scirrhus, but on careful examination he found some deep-seated fluctuation with tenderness on pressure, thus establishing the diagnosis which was confirmed on incision.

Points in making the diagnosis would be: (1) whether the lump had formed in relation with lactation; (2) presence of deep tenderness on pressure; (3) the age of the patient and the rate of growth; (4) the margin of the growth whether well-defined or not; (5) the resistance of the tumour, if elastic or of a woodeny hardness. Réclus describes an interesting case showing the difficulty of diagnosis.

A woman, aged 29, in splendid health, had a lump the size of an egg, with well-defined margin, but a granular condition of the gland over it. No elasticity or fluctuation; glands in the axilla. Skin and nipple normal. No pain or tenderness on pressure. The points against carcinoma

were the age, no adhesion of the skin, and, although the tumour was large it had well-defined limits and the nipple natural. In favour of carcinoma was its wooden hardness. On tapping it pus was got. The history was that she had been confined six years before, and had suckled for nineteen months; after that the lump was noticed.

Confusion with the encapsuled tumours is not likely, as they are freely movable in the gland, but from a cyst diagnosis is not at all easy. Here we should get the history of lactation and the thickening in the breast around, and perhaps the association of adhesion and œdema of the skin.

A case came under my notice where the tumour appeared to be a cystosarcoma, and it was the preliminary puncture that determined its true nature.

A. D., aged 37, admitted under the care of Mr. Clutton. Three years before noticed small lump in the right breast during lactation; this remained stationary for two years. During the last year it had increased in size, especially in the last three months; there had been no pain until the past few weeks. There was no loss of flesh. The right breast was very prominent and large, and its margins sharply defined; it was lobulated, especially at its upper and outer part. The skin over it was smooth and glistening, rather dusky in colour, but not at all adherent, and there were large veins coursing over its surface. It moved freely on the deep tissues. The tumour was very elastic, and apparently fluctuated. There were no enlarged glands. On tapping it, pus was drawn off, and on free incision it was found that there was a large loculated abscess cavity containing a large quantity of creamy pus which was somewhat offensive.

Réclus[1] had a case very like this where the resemblance to cystosarcoma made the diagnosis very doubtful.

The prognosis in these cases of course varies with the clinical developments. Should an indurated nodule result, and the local tenderness be lost, then we may say that the lump itself is not harmful, and may ultimately disappear. When suppuration has taken place, with the exit of the pus, if contained only in one cavity, the inflammatory mass soon resolves. If the cavities are multiple and drainage defective, there may arise sinuses which take a very long period to heal up. Whether any more serious sequel, as carcinoma, arises, it is difficult to say, but there is no evidence to support it.

Treatment.—In those cases where indurated nodules are left behind their resolution may be aided by local absorbents. Many of these were the cases in which pressure caused the disappearance of a supposed cancer, and it might accordingly be tried. Where the diagnosis is at all uncertain, remembering the experience of other surgeons where amputations have been performed unnecessarily, exploration by a grooved needle or by incision should not be omitted. The success obtained by this will guide our further action. If it is inflammatory a free incision with packing the cavity from the bottom is to be pursued. If the case should be one in which sinuses are present, communicating with ragged cavities, these may be laid open. If the breast should be very disorganised, and especially if the patient is reaching the end of the child-bearing period, extirpation might be entertained.

II.—Tuberculous Mastitis.

This specific form of chronic inflammation of the breast has, up to the last few years, been very little understood. Many of the cases of chronic suppurative mastitis are with difficulty to be separated except by microscopical investigation. The

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[1] *Clin. Chirurg.*, p. 429.

disease, however, is not nearly so rare as it is supposed to be The first surgeon to draw attention to this disease was Sir Astley Cooper, who, in his *Illustrations of Diseases of the Breast*, has a chapter on the "Scrofulous Tumour." He says "he had seen such swellings, single or multiple, in the breasts of women with enlarged glands which were very indolent and varied with the health of the individual." Velpeau[2] described "lymphatic or tuberculous tumours," which he thought must be of extreme rarity and could be met with only in women with tubercles in other organs. Virchow and Cornil and Ranvier have doubted the existence of a breast tuberculosis, but Cornil later has recognised it as an established fact. Billroth, in the *Deutsche Chirurgie*, quotes the case, which he saw when he was assistant in Langenbeck's clinic, of a blonde girl with different scrofulous affections. She had in one breast many nodules of the size of a hazelnut, which were proved to contain yellow cheesy pus, and he pronounced it to be "cheesy chronic lobular mastitis." Since this date from other cases he recognises a tuberculous mastitis. In the last few years there have been many communications on the subject by Ohnacher,[3] Le Dentu,[4] Klotz,[5] and particularly by Dubar.[6] It is to the last in his thesis that we are indebted considerably for a knowledge of this disease.

Causation.—Many of the cases—about half—occur in relation with other tuberculous lesions, especially pulmonary. If the breast affection is primary, they have as a rule some strong hereditary taint. Of eight cases which have come under my notice, none curiously had any very evident lesion elsewhere; one case had suspicious signs at the apices, and another had had a pleurisy eight years before. In six there was a strong family history of tubercle, in another the woman's husband had died of phthisis, and in the other there was no history. Of more direct causes we have: (1) Injury; one case arose from a squeeze received eighteen months before, and another was referred to a blow six weeks before.[7] (2) Many—Mandry, Park, Dubar, and Delbet—assert that pregnancy and lactation are the chief exciting causes. In cases described by Orthmann and Habermass the disease developed during lactation, and seemed to progress along the ducts. An old quiescent induration may with a fresh lactation become active and show signs of its tuberculous nature, as in the following cases:

F. B., aged 38, a married woman with two healthy children, with no evidence of tubercle, but her father is said to have died of consumption, noticed a lump in the right breast after a lactation ten years before, which remained hard and uninfluenced by subsequent pregnancies until three months before admission (under Mr. Croft), when slight pain was noticed. The skin above and to the right of the nipple had been getting a little reddened. There was no pain or tenderness. The swelling was rounded, nodular, and distinctly circumscribed, with fluctuation. The whole mass was about the size of a five-shilling piece and flattened, and could be lifted off the deep tissues. The axillary glands were not enlarged. On incision, caseous pus was evacuated from a small cavity with ragged walls.

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[2] Diseases of the Breast, *Syd. Soc. Trans.*, p. 221.

[3] Ohnacher, Der Tuberculose der weiblichen Brustdruse, *Arch. f. klin. Chir.*, 1883, xxviii.

[4] Le Dentu, Tubercules de la Mamelle, *Rev. de Chir.*, 1881, i, 27.

[5] Klotz, *Arch. f. klin. Chir.*, Bd. xxv, 366.

[6] Dubar, Des Tubercules de la Mammelle, *Thèse de Paris*, 1881.

[7] Hebb, *Path. Soc. Trans.*, vol. xli.

L. B., aged 38, and married, whose mother was said to have died of phthisis, had an abscess in the left breast ten years before, and as a consequence had not used it for suckling since. She had had eight children, which were healthy. Her youngest child suckled till 18 months old, and at the end of that time—about six weeks before coming under the care of Sir William Mac Cormac—she found a lump the size of a filbert in the left breast, which had gradually increased. On the inner side there was a hard nodular swelling, the size of a five-shilling piece, in the breast tissue. The skin over it was slightly adherent, and there were no enlarged axillary glands. The nipple had always been retracted. The right breast was normal. After amputation the breast contained a cavity with ragged walls, surrounded by much altered structures around; in its interior were thick caseous lumps suspended in a thin fluid.

(3) Cold is said sometimes to be a cause. It was possibly a factor in the following case:

E. M., a single woman, pale and thin, aged 25, with a history of phthisis on the father's side, caught cold two months before. At the inner and lower part of the breast was a hard lump, 3 inches in diameter, over which the skin was slightly adherent. There was slight pain. In the middle of the mass it was softened. There was no discharge from nipple, but there was a gland in the axilla. The temperature was normal. The lump was incised, and caseous matter set free; the fluid, however, showed no bacilli. When she left the hospital it had not healed up.

Sex.—The disease in the majority of instances affects women. I have not met with one in a man, nor in English literature is there one recorded. Out of 37 cases collected by Delbet,[8] only 2 were in men.

Age.—Delbet, out of his 37 cases, knew the age in 32:

4	were between	15 and 20
12	,,	21 and 30
9	,,	31 and 40
6	,,	41 and 50
1	at	52

Thus, of these, more than half were between 25 and 35.

Of 12 cases recorded by Hebb (2), Lane (2), and those collected by myself:

3	were between	20 and 30
1	was ,,	30 and 35
6	were ,,	35 and 40
2	,, ,,	40 and 50

Eight of these (66.6 per cent.) were married women, and 4 unmarried; of those married, 3 were sterile. Of all these cases (49) there has not been a single one observed under puberty.

Side.—A larger proportion of cases have been met with on the left side—7 out of 8.

The disease may exist for some considerable time without troubling its victim, so that advice is sought late. Its presence may be reckoned by months, and in some instances years.

Forms of the Disease.—Velpeau, in his description of tuberculous tumours, mentions first disseminated tubercles, of which he gives the following account: They are multiple tumours, from the size of a hazelnut to a walnut, and seemingly made up of so many lobules and fibrocellular tissue between. Almost all the lobules (which are often softened in the centre) are infiltrated or filled with tuberculous or caseous matter mixed here and there with little foci of greyish, serous, or flocculent pus. In one case the disease was of four

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[8] *Traité de Chirurg.*, Duplay et Réclus, tome vi.

years' duration, and had, the patient said, been induced by a blow from the elbow. One of the axillary glands, which had become as large as a walnut, was covered with tuberculous or cheesy lumps. Although the lungs appeared sound, and there was no glandular enlargement elsewhere, the patient had always been delicate and of marked tuberculous diathesis. He then describes a form called the "purulent lymphatic tumour," which is usually single, lumpy, and irregular in shape, usually of indolent growth, and may occur in relation with a blow; they have caseous or tuberculous pus in them. The following case is quoted in illustration of this form:

A woman of about 30 years of age had had for two years a tumour, which was about the size of a hen's egg, lumpy, movable, and had arisen without any appreciable cause. No fluctuation could be discovered in it. It was elastic, tolerably hard, with a certain amount of thickening. She was emaciated and had feeble health. As it was thought it might be cancerous, it was removed and proved to be tuberculous. The patient, who at the time of operation had no lesion elsewhere, after three months developed pulmonary phthisis and enlargement of axillary glands. She died a few months later, and two typical tuberculous masses were found in the other breast.

These descriptions of Velpeau's, made years ago, are certainly very accurate. Most observers seem to agree that the lesions are found under two different forms, the confluent and the disseminated.

The confluent is the more frequent of the two. It presents the form of a single, ill-defined, bossy tumour, moving with the breast on the chest wall. Its edge has not the marked boundary as occurs in most cases of simple chronic mastitis, and it very often sends off processes into the surrounding tissue as a carcinoma does. The skin may or may not be adherent; if the latter, the tissues beneath have become infiltrated, and thus the skin is implicated. The nipple will be retracted where the inflammatory swelling is central.

The disseminated form is rarer. In this variety we get scattered nodules, between which the tissue may or may not be sound. These nodules tend to run together and become the confluent form.

Ohnacher considered that this disseminated form was secondary to the confluent form, and due to new foci springing up around the primary centre. G. Mandry[9] recognises two forms of primary tubercle: (1) Very chronic—a low inflammation with induration, caseation, softening, etc.; abscesses with retraction of nipple and enlarged axillary glands. This agrees with the confluent form of most observers. (2) The intramammary cold abscess, generally associated with tubercle elsewhere. It is a tense elastic swelling, full of thin curdy pus.

Miliary tubercle of the breast up to the present has not been recorded. The commonest clinical form, then, of breast tubercle is the single confluent tumour. The rate of increase of such growth is very variable, in some very chronic, in a few cases running somewhat an acute course. Before very long we find—and it is the commonest sequel—that destructive changes ensue in its centre, giving rise to a softened patch and the development of curdy pus. Ultimately the skin gives way, and this caseous pus is discharged from a fistulous opening. The sinus or sinuses thus formed will be

[9] *Beiträge zur klin. Chir.*, 1891, vol. viii, pt. 1.

found to lead down into a cavity, or intercommunicating cavities, which present ragged walls. No case has as yet been recorded where calcification has taken place in lieu of the above destruction.

A general fibroid change probably results in a few cases, of which the following is possibly an example; but we could not here be certain that the tuberculous lesion had not been implanted on the top of a chronic interstitial mastitis. In favour of the tubercle being the primary disease is the fact that this one breast alone was affected, whereas in the chronic interstitial disease the majority of cases are bilateral.

E. S., aged 40, admitted December, 1891, under the care of Mr. Pitts. Father and mother both died of consumption; married eighteen years; no children or miscarriages; menstruation regular and profuse until two years before, and very painful in earlier years. Eighteen months before coming under notice she had a squeeze to the left breast, but except for a little temporary pain she noticed nothing, and forgot all about it. About four months ago she had some stabbing pain in the breast, and it seemed as if inflamed. With belladonna and hot fomentations this pain became less noticeable, but there was a distinct lump to be felt in the breast. On admission there was very little pain. On the inner side beneath the areola there was a thickening about the size of a half-crown in the breast substance; its edge was not well defined, and the skin over it distinctly dimpled. The nipple was somewhat retracted, and there had been a little yellow discharge from time to time. The axillary glands were enlarged on the same side. The remainder of the gland was more marked than normal, but soft, its edge being very definite, slipping away beneath the finger. A most characteristic feature was great tenderness on pressure over the thickened area. There were suspicious signs at both apices. On incision into the indurated area a yellow tuberculous focus was displayed, and the nature of the lesion thus being determined, the gland was removed. On examination this tuberculous nodule was about the area of a shilling, yellow, not softening, and was surrounded by a soft fibrous tissue, which was distributed generally through the breast substance. There were no other tuberculous foci found. Microscopically this yellow nodule proved to be an undoubted tuberculous infiltration, with a large number of giant cells in the granulation tissue. Only in one or two could any of the gland elements be found in relation with the disease, though, where acini were discovered, the disease appeared undoubtedly "periacinous."

All the cases I have seen belong to the confluent form. According to Delbet, the outer segment of the breast is more often affected (in 10 out of 18 cases), and in my small number of observations there is about the same proportion.

The axillary glands become involved in the majority of cases, apparently with no relation to the situation of the diseased focus in the breast. There may be felt a definite thickened cord stretching along the edge of the pectoral muscle to the axilla. When the glands are affected the disease very often seems to progress in them more rapidly than in the breast, leading to softening and breaking down. In some cases the breast is secondarily affected to the axillary lymphatics, and so the history should carefully ascertain the part first involved.

Symptoms.—The onset of the disease is generally insidious, and so not noticed; its discovery often is purely accidental.

Sir Astley Cooper, in the cases that he saw, remarks on their indolence developing without pain and scarcely any tenderness on pressure.

Delbet says that there is little or no pain. The cases that I have noted do not bear out this statement, for in all there has been some complaint of pain. In one case it was described as stabbing, in five as being present on and off, and in another as passing to the shoulder.

There may or may not be localised tenderness; if present this is probable in relation with the associated mastitis. In four cases this was a marked symptom.

Loss of flesh may occur if the breast is discharging much, and especially if there are other lesions present. Then we may have other symptoms indicative of tubercle, cough, hæmoptysis, etc.

The following cases of breast tuberculosis are illustrative of the above remarks :

H. H., 43 (under the care of Mr. Croft), married seventeen years, but childless; menstruation regular, one brother and sister died of lung mischief. The patient herself had had a pleurisy eight years before, but there were no indications. She had only noticed the lump for one week, her attention being drawn to it by pain, which extended to the left shoulder. The tumour was in the upper and inner part of the left breast, flattened, and hard. Its surface was smooth and its margin was infiltrat-

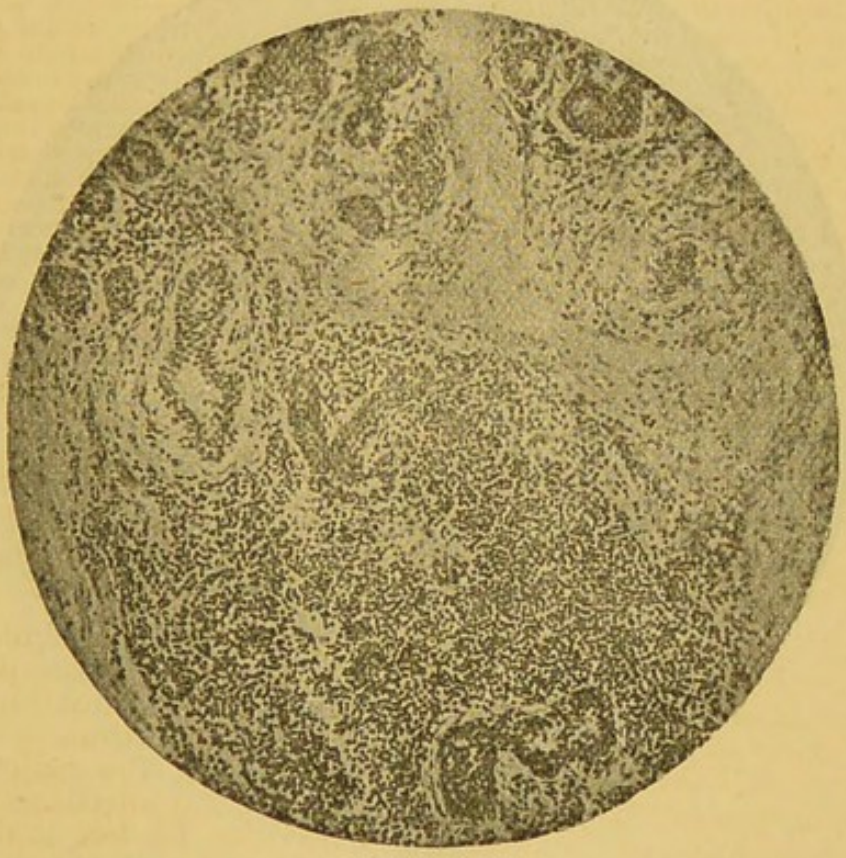

Fig. 1.

ing into the breast substance around. The lump was tender to touch and extended from the areola to the periphery, fluctuating in the centre. There was no retraction or discharge from nipple. The skin was not adherent or discoloured. There were two or three enlarged glands in the axilla. The patient had lost flesh. After amputation the breast was seen to be chronically inflamed with a softening centre. This histologically showed its wall made up of a tuberculous infiltration with giant cells in it. The pus in this cavity was curdy.

R. F.,[10] aged 21, was a delicate-looking girl, with no history of tubercle in the family; six years before she had noticed a lump the size of a hazelnut in the left breast; painful on and off. She had noticed enlargement of axillary glands for about a year. The tumour was at the upper and outer part of the breast, the skin over it being a little adherent but not reddened. From this swelling there went a hard cord to the gland in the axilla. There was no fluctuation. A sector of the breast with the axillary glands was removed. In the breast was an abscess

[10] Shattock, *Trans' Pathol. Soc.*, vol. xl, p. 391.

cavity with fungating walls, containing curdy pus, and the lymphatic glands showed caseous centres. Histologically it was proved to be undoubtedly tuberculous.

Mode of Origin.—The breast may become involved by continuity either from the axillary glands or from a diseased pleura, but those cases do not here concern us. The mode of origin will be dependent upon whether the breast lesion is primary or secondary. If the latter it is possible that the virus is brought by the blood vessels, and deposited in the interstitial tissue in which the lesions are found, or it may be a case of auto-infection, the disease spreading along the ducts. If the lesion is primary, the virus may be introduced either through some fissure in which the lesion is again in the con-

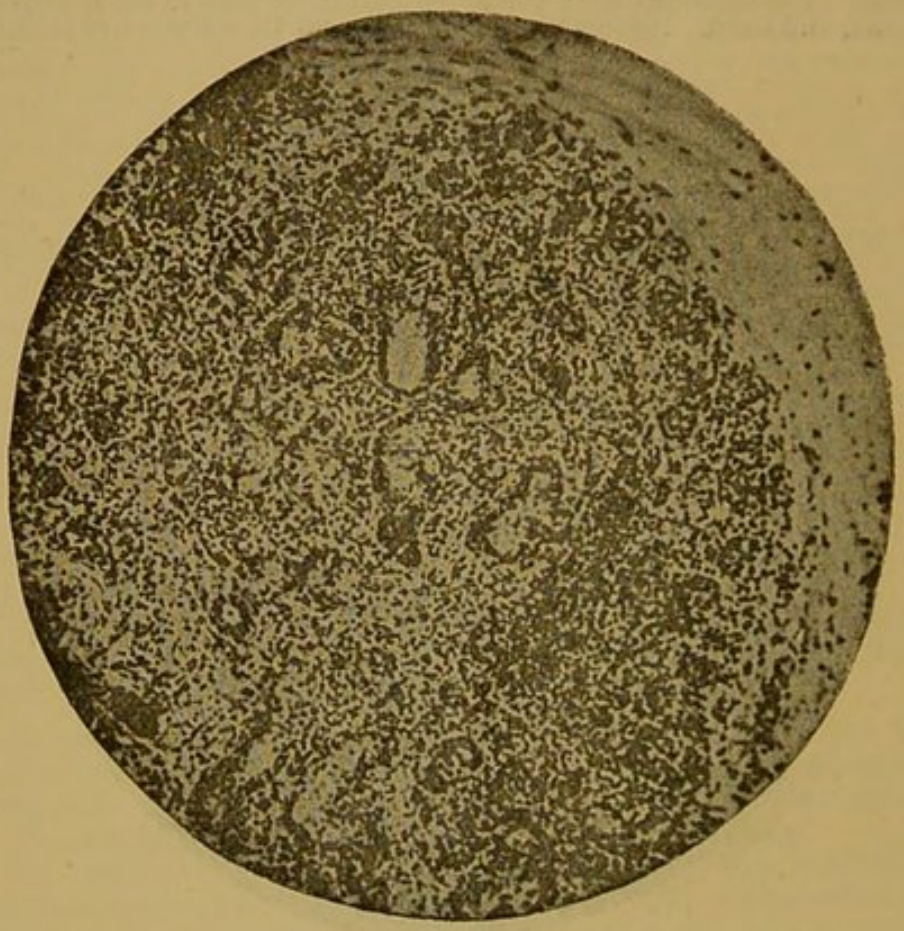

Fig. 2.

nective tissue, or, what is far commoner, by the ducts. Here the virus acts on the glandular tissue, primarily inducing epithelial changes, as may be seen in sections, and this is accompanied by a connective tissue infiltration, which ultimately causes the disappearance of the gland elements. Krammer quotes a case beginning as a tuberculous ulceration of the nipple following an affection of the ducts. As to how the breasts have become infected in the cases quoted I am unable to give any explanation.

Histology.

On making sections through a focus of disease where the case begins in the gland, we see that the acini and small ducts are surrounded by an accumulation of small round cells (periacinous inflammation). The epithelium of the acini shows

proliferation, and in some spots the small ducts and acini have dilated. In the midst of this granulation material we see giant cells, but these seem to bear no relation to the gland structure. Delbet makes, however, a different statement, considering that the giant cells owe their origin to the changed acini, that is, they are derived from the glandular part and not from the connective tissue (see Fig. 1).

2. As the round cells accumulate the structure of the lobule becomes more and more altered, so that in an advanced state we simply have a mass of granulation material in which may be seen a few dilated ducts (see Fig. 2).

3. The giant cells vary greatly in number, never being numerous, and never having a definite arrangement of epi-

Fig. 3.

thelioid cells round such as would be met with in a miliary tubercle, that is, it is a tuberculous infiltration (see Fig. 3).

4. All the gland elements ultimately disappear, and very soon degenerative changes take place in the centre leading to destruction of the nodule. There is caseation evidenced by the curdy lumps seen on opening the mass, or escaping from the sinuses if such takes place spontaneously. Dubar found epithelioid proliferation of the vessels and blocking as in syphilis, this being the cause of the necrosis, and being analogous with what occurs in the destruction of gummata. The caseous abscess on section will have a zone of varying depth of necrosed tissue, and outside this will be a few giant cells with granulation material (see Fig. 4).

5. In sections through the larger ducts we may find

tuberculous nodules in the connective tissue beneath the lining epithelium (see Fig. 5).

If we examine a case which has apparently started in the connective tissue, we have the same sequence of events, only the starting does not bear any relation to the glandular structure. In a case where this happened, there appeared to be a far larger proportion of giant cells than in the former.

Bacilli are rarely to be found, but I do not think their absence prevents us from diagnosing a case as "tuberculous" when there is a marked family history and characteristic caseous pus from the softened mass.

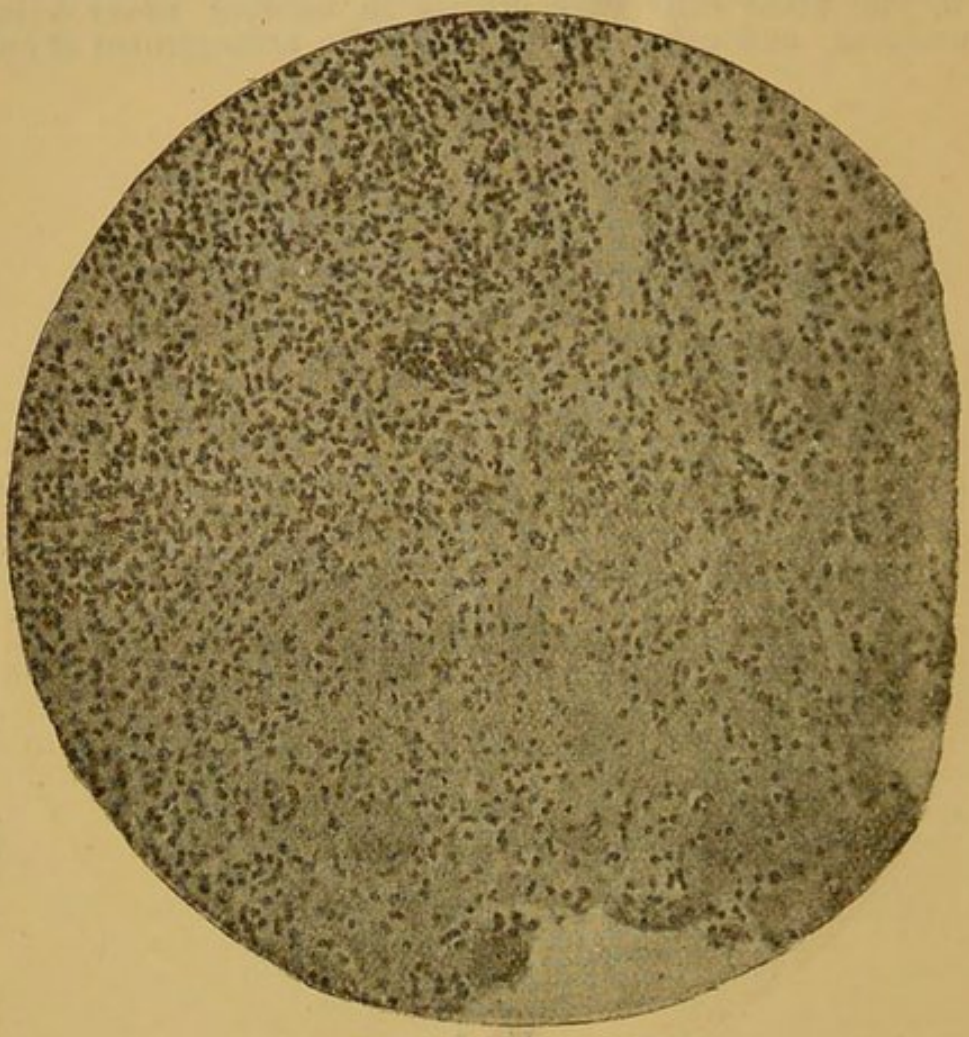

Fig. 4.

Diagnosis.

In cases of primary tuberculous disease of the breast, with the skin sound, the diagnosis may be very difficult. Take care to exclude other cases giving rise to sinuses, etc., as submammary abscess due to rib necrosis or to pointing empyema. Those cases where there are one or more fistulous openings discharging a curdy pus, and perhaps a history of tubercle in family, or showing other lesions, give no difficulty. The diagnosis has to be made from:—

1. *Chronic Suppurative Mastitis.*—This is not at all easy where the case is a primary one. In the tubercle we should not expect such a definite outline, and when there is an opening the pus should be curdy, not thick and yellow. Astley Cooper gave as a point of distinction the absence of tender-

ness, but in four of the cases that have come under my notice this has been rather a prominent symptom. Pain when suppuration is taking place would be more marked in chronic mastitis. Enlargement of the axillary glands is a much more constant feature in tubercle, and such, when present, are not so systematically tender as they are in cases of simple inflammation. Both of them have relation to lactation, so this is not of great assistance, but this unaccompanied by other signs favours mastitis.

2. *Chronic Interstitial Mastitis.*—In rare cases the tuberculous lesion may simulate this, as in the case quoted before. Here the breast was uniformly enlarged without any nodula-

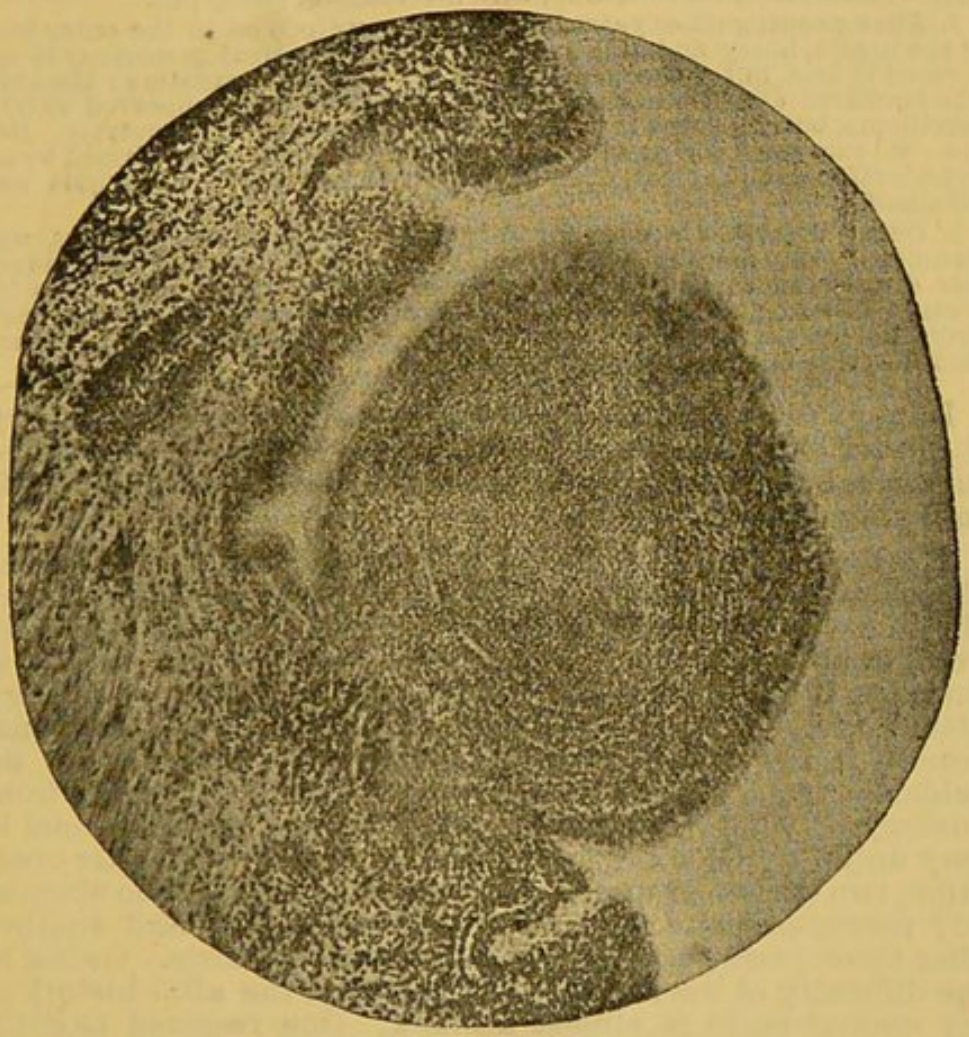

Fig. 5.

tion, and with a well-defined edge—in fact, characteristically "cake-like." But there were points which enabled the diagnosis of tubercle to be made, in that there was slight adhesion of the skin with localised tenderness. The former is not likely to be present in chronic diffuse interstitial mastitis unless there had been some former inflammatory trouble in the breast; and the latter symptom in chronic mastitis, if a feature at all, would only be present perhaps during menstruation. Enlargement of the axillary glands seemed quite confirmatory of tubercle.

3. *From Carcinoma.*—In some cases it is so difficult that breasts have been removed on the above diagnosis. In the

case of L. B. (Sir William MacCormac), the breast, the seat of an old abscess, became enlarged in the space of a few weeks, giving an isolated swelling, skin adherent with some pain, but no enlarged glands. Its acute development suggested cancer, and accordingly the breast was amputated; but to the naked eye on section it was evidently a chronic suppurative mastitis, and on histological investigation it proved to be tubercle. Réclus[11] quotes the following to prove the difficulty:—

1. A woman, aged 40, with a tumour the size of an egg, without any definite margin. It had a bossy surface, and was of woodeny hardness. The skin was involved and puckered, and the axillary glands were enlarged. So certain was the diagnosis of cancer from these facts, that the operation had been fixed, when a sudden hæmoptysis took place; the tumour itself later on softening, with discharge of curdy pus.

2. After weaning three years before, a tumour formed in the outer part of the breast, bossy and infiltrating. During the next pregnancy it increased in size, but quite painless. There was no fluctuation; the skin was puckered and the axillary glands enlarged. This appeared to be a carcinoma, but, on going into the history, she had had hæmoptysis. Her age—30—suggested the possibility of tubercle, which was confirmed by an examination of the apices, and, on inquiry, history of hæmoptysis was obtained.

3. Dubar describes a case for diagnosis. The woman, aged 23, was strumous. Ten months after weaning, a lump, the size of an almond, was discovered at the upper and outer part of the breast. This increased in size, and the nipple became retracted and the skin adherent. From her strumous appearance, tubercle was considered, and, on incision into this mass, curdy pus was set free.

In none of these three cases was there any fluctuation. On the other hand, Habermass had a case which he considered tubercle, but on section it proved to be a case of multiple softening cancer.

Prognosis.—When the lesion is secondary to a primary one elsewhere, the prognosis is here not affected, as, owing to the chronicity of the breast disease, the patient's death is usually brought about by the primary lesion. When the disease is primary, it tends to be progressive locally, to involve axillary glands, etc., or to have lung lesions. Whether it is ever succeeded, if left alone, by acute miliary tubercle, there is no evidence; such a thing has not been recorded. Judging from analogy of what happens in other organs, such a sequel is very unlikely. Of six cases (quoted by Delbet) seen after operation, two remained under observation for a long time without any recurrence, one recurred after nine months, and another after three years; two died of pulmonary phthisis. Owing to the difficulty of tracing hospital patients, the after-history of my quoted cases is almost a blank. One recurred slightly in the scar after a few months, but she has now gone for nearly a year without any recurrence.

Should the patient be suckling, this should immediately be stopped, to prevent infection of the infant. This pathological lesion has its analogue in the tuberculous mammitis of cows. Koch[12] writes it is certain that the milk of tuberculous cows may give rise to infection, and is of opinion that, unless the udder is diseased, the milk will contain no bacilli, and is not infective. In the cases that have come under my notice, cultivations have not been made, and I have no sufficient evidence to offer as to the effect of the milk on the

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[11] *Clin. Chir. de l'Hôtel-Dieu*, 1888.

[12] Shattock, *Trans. Path. Soc.*, vol. xl, p. 394.

health of the offspring. Only two of my eight cases had children, and in both they were perfectly healthy. Dr. Hebb, however, quotes a case where a phthisical woman with disease of the breast had eight children, five of whom are said to have died of tuberculosis, but we cannot draw any definite conclusion from this.

Treatment.—Sir A. Cooper says that it is "not justifiable to remove," but then he does not appear to have seen a primary case. Should the disease of the breast be in relation with tuberculous disease elsewhere, I do not think we need consider that there is any necessity to extirpate the gland, except where the local inconvenience renders some interference desirable. If the disease is primary, we should undoubtedly deal with it as we should with any malignant growth—namely, extirpate the gland. If the axillary lymphatics are affected, then they should be removed at the same time.