A Clinical Lecture

ON

HYPERPLASIA OF BREAST TISSUES

(MAZOPLASIA*—"CHRONIC MASTITIS").

DELIVERED BEFORE THE NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY

BY

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(With Special Plate.)

THE complete difference in histological and biological characters that definitely distinguish acute from chronic inflammation makes it difficult to understand how the term "inflammation" can be common to both processes, until one realizes that the terms were applied when the knowledge of pathological processes was based on more slender evidence than exists at the present time. I recognize the advantages of conservatism in dealing with established terms, yet for some years I have found it impossible in this instance to orientate freshly one's views concerning these two processes and at the same time to adhere to the old nomenclature.

I shall be able to make myself clear if I do not use the term "chronic mastitis." I believe that if, when pathological changes in the breast are being described, all were to adopt the same course, they would be more easily explained and more simple to understand. If I refrain from using the term "chronic mastitis," what term can I employ? To answer this question let me mention some of the various pathological changes that can be induced by local irritation, and from that list I will extract changes that immediately concern the subject of my lecture.

First of all, irritation may be induced by the following agents: mechanical, infective, chemical (biochemical), thermal, electrical, nervous, x rays, and radium. The list of the various changes that can be induced by these forms of irritation is as follows:

1. Increase of normal activity leading to hypertrophy.
2. Excess of normal activity leading to atrophy.
3. Fertilization of ova—for example, mechanical irritation of frogs' ova inducing the development of normal frogs; and the chemical alteration of the medium in which the ova of sea-urchins live leading to the development of normal sea-urchins.
4. Biological changes of the tissues irritated by their ordinary exposure to life wear—that is, biotripsis. (See Figs. 1 and 2, and BRITISH MEDICAL JOURNAL, June 12th, 1909.)
5. Hyperplasia of epithelium and of connective tissues.
6. Acute inflammation.
7. Suppuration.
8. Ulceration.
9. Gangrene.

In considering the irritants it must be borne in mind that the results of irritation depend upon the kind, degree, and length of application of the irritants, and also upon the state of the parts irritated.

Although the matter contained in (5) is the main subject of my thesis, I must draw particular attention to matter contained in (4), because I do not know to what extent it influences the changes described in (5).

BIOLOGICAL CHANGES DUE TO LIFE WEAR (4).

I will content myself by giving the example of biotripsis which is illustrated in Fig. 1. The backs of the hands belonging to a woman are seen. She had lived all her life in a small Oxfordshire village, and her daily occupation was her domestic duties. She was 72 years old. Her hands had never been chapped, nor had she suffered from chilblains, nor had there been any solution of continuity. The skin on the dorsal surfaces of the hands is shiny, smooth, inelastic, and so thin that the veins appear to be in contact with the epithelium. In parts there is profuse pigmentation, and in others pigment is absent and the skin is white. The condition is symmetrical and is more marked over the backs of

* I asked my friend Sir Humphry Rolleston if he could suggest a single word to represent the phrase of four words. He very kindly suggested either "mastoplasia," or "mazoplasia." Of the two, he preferred the latter; so, to those who require one word instead of "hyperplasia of breast tissue," I would recommend "mazoplasia."

the second metacarpals. There was no disturbance of sensation. Curiously enough, the most frequent seats of warts and carcinoma of the hands are on the backs of hands, and most commonly in the skin covering the second metacarpal bone as seen in the case depicted in Fig. 2.

The whole history of this biotriptic change resembles skin that has been overexposed to x rays. A great many patients who suffer from carcinoma of the hands are gardeners: a fact that suggests that exposure to sunlight has a great deal to do in inducing this particular form of biotripsis.

HYPERPLASIA OF BREAST TISSUES (5).

Epithelial and connective tissues are affected in this hyperplasia, and I wish particularly to point out that in most examples they undergo this process in some form or other together; very probably the only exceptions which occur are some examples of sarcoma of the breast. As I proceed I shall make myself clear in what appears to be confusion in one state of things. My appreciation that one of my notions was not clear to all arose out of a courteous letter I received from Dr. J. C. Bloodgood of Baltimore, who tells me that although he began his investigations with the object of proving that cysts of the breasts are dangerous, he came to the opposite conclusion, that large "blue-domed" cysts are not dangerous, and on these grounds Dr. Bloodgood wanted to know why I consider cysts to be dangerous. My reasons will appear as I proceed.

I will now describe the various forms of hyperplasia of breast tissues, and as far as I can in the sequence of their occurrence.

1. Desquamative Hyperplasia of Epithelium Lining Ducts and Acini.

This is an important type, and many pathological changes occur as the result of this hyperplasia. The epithelium of the ducts proliferates from many parts of the circumference of the duct walls and by meeting in the centre of their lumens nearly fills the ducts, leaving spaces in them which are occupied by desquamated large round cells, which contain small degenerated nuclei. The epithelium of acini also undergoes a proliferation. The effect of proliferation and desquamation is to distend the duct, or acinus, as the case may be, and this distension induces secondary proliferating changes in the connective tissues outside them.

2. Permanent Duct and Acinus Cysts.

Duct and acinus cysts are formed permanently by this process unless it be arrested. The distended, lengthened, and convoluted ducts, when cut longitudinally, appear to be separate cysts. When cysts have become established there will be permanent stagnation of their contents, and the contained irritant would then be able to act undisturbed over a long period.

It is important to watch what may occur to a small young cyst in which the epithelium is active. First, it may grow into the least dangerous thing that may happen—namely, a big cyst in which the epithelium becomes so degenerated and inactive that irritation can no longer induce important results when applied to it. This is the "blue-domed" cyst described by Dr. Bloodgood, and I quite agree with him that, as a rule, this kind of cyst is not very dangerous, although I have three specimens of it in which carcinoma began. Secondly, in the smaller developing cysts more serious and dangerous changes may occur. In them papillomata and carcinoma may develop, either together or separately in the same breast.

3. Character of the Papillomata.

Papillomata thus arising may be uniradicular or multiradicular. The latter are by far the more common, more widely distributed, and eventually become associated with carcinoma, either (1) by becoming carcinomatous or (2) by occurring in the same ducts of the breast that are associated with carcinoma. I am sure the latter association is more common than is generally supposed. It is common for a multiradicular papilloma to occur in a duct which is in continuity with a carcinoma that has begun in or near its peripheral distribution, although there may be no obvious etiological connexion between the two processes. It is probable that common agents of irritation may be factors

that induce both tumours. The fact that the two tumours frequently occur in the distribution of the same duct more than suggests that this theory is correct (Fig. 3).

The epithelium covering papillomata may be arranged in many layers and may be exceedingly active in appearance. In other examples the epithelium may be arranged in two or more layers, and may be desquamating in type. Multiradicular papillomata are usually multiple; only rarely are they met with singly. Should a single papilloma occur, its most common situation is in the ampulla of a duct. When papillomata are multiple, one can usually be observed in the ampulla of the duct in which many are growing. That the duct ampulla is a common situation is interesting for two reasons: it is near the duct exit on the surface of the nipple, and hence near sources of irritation, and also it is a dilated cavity in which stagnation may occur.

4. Non-desquamating Epithelial Hyperplasia.

I now pass on to another and more serious change in the epithelium, which causes small cysts, and spreads as a primary process in those that are already formed. The cysts may be full of epithelial cells, may be lined with two or three layers of them, or two or three layers of epithelial cells may line only one part of them (Fig. 4). I regard this as a cystic condition, and these are the cysts to which I allude mainly when I say, "Cysts are dangerous," and the breast containing them should be removed. To this class belongs epithelial hyperplasia more active in appearance and which is not desquamative. I cannot be sure how nearly this non-desquamative epithelial hyperplasia is related to the desquamative type. They may exist together. In the non-desquamative type the cells composing it are more lusty and more irregular in shape. It may affect ducts and acini. It usually affects the terminal branches of one duct and some of its acini, or more than one duct, but it may affect the whole distribution of a duct up to and including the ampulla. I have not seen the whole of the breast affected. The condition may be localized or very diffuse, and occurs in women over 30 years of age. There is no capsule.

Dr. Bloodgood describes the condition under the term "comedo-adenoma,"* and has pointed out, in a record of forty-nine cases, that "This tumour should always be treated as cancer, because in twenty-eight out of the forty-nine cases definite cancer was found microscopically.

After cutting whole sections of breasts containing this condition my own opinion is that usually at some point or other it infiltrates surrounding tissues, and I consider that it should be regarded as part of the process of carcinoma. It affects duct and acinus in combination. The duct epithelium also becomes markedly papillomatous as well as laciform (Fig. 4).

Before leaving the subject of non-desquamative hyperplasia of epithelium, or, according to Dr. Bloodgood's nomenclature, "comedo-adenoma," I would like to draw your attention to the evidence I have already given as to the importance of this tumour. In what Dr. Bloodgood calls the benign condition, the completely benign nature of which seems to me very doubtful, it will be seen that it induces duct and acinus cysts (see Fig. 4). If this state is compared with the appearances seen when its carcinomatous state is flagrantly rampant, the malignant duct and acinus cystic arrangements can be very definitely observed in Fig. 5, and it is an indication that I am right in stating that the process of carcinoma affects primarily epithelial cells which cover comparatively extensive surfaces of ducts and acini.

So far as I have gone I have described desquamative epithelial hyperplasia, cysts, papillomata, and hyperplasia of epithelium that is not desquamative, all of which processes are swept unceremoniously together, at the present moment, under the misleading title of "chronic mastitis," and as such they are being diagnosed.

The list that this term, at present, includes is not exhausted by the processes above described, as I shall now show. To make these additional pathological changes clear

I draw particular attention to the anatomical relations of the elastica of the breast. The three particular parts are:

1. The delicate connective tissue immediately internal to the elastica. The proliferation that occurs in this tissue will be termed "hyperplasia intra-elastica."
2. The elastica, proliferation of which will be termed "hyperplasia elastica."
3. The fibrous tissue which is outside the elastica and which closely invests the ducts and acini throughout the breast; proliferation of this fibrous tissue will be called "hyperplasia extra-elastica."

With the exception of hyperplasia elastica, which appears only as a diffuse form affecting many ducts and acini of the breast, the hyperplasia of these tissues can be localized or diffused. The intra-elastica localized connective tissue tumours appear as papillomata and intra-canalicular fibro-adenomata. The extra-elastica localized tumours appear as fibro-adenomata. Into the description of these localized conditions I do not propose to enter, having already done so completely.*

All the diffuse forms to which I have alluded are now collected in a most haphazard manner under the heading of "chronic mastitis." When one hears surgeons say that "chronic mastitis" is never, in their opinion, a prelude of carcinoma, it is possible that they do not quite realize that the clinical signs on which they diagnose "chronic mastitis" include the several totally different pathological changes which I have just enumerated and need not repeat. The hyperplasia intra-elastica I discovered accidentally in staining the elastica of carcinomatous breasts; and it is interesting to state that since making this observation Dr. Cramer of the Imperial Cancer Research has induced diffuse hyperplasia intra-elastica in the breasts of rabbits by the introduction of tar into the mammary glands. The diffuse hyperplasia extra-elastica is the only type that I would consider to exist more commonly than the other types in the least dangerous circumstances.

CLINICAL INDICATIONS.

It would be a very important step if one could isolate different clinical signs for each of these separate processes, although at the present moment this cannot be done with accuracy; yet a great many points can be demonstrated which lead to the recognition of important conditions of the breast—points which hitherto have been either totally disregarded, or to which only slight attention has been paid.

Multiple fluid swellings, of course, indicate cysts, and when these are demonstrable they have probably passed from the dangerous stage into that in which they are lined only by degenerated inactive epithelium, in which carcinoma only rarely arises. As a rule these breasts contain small cysts in which the epithelium is active, and in spite of what so great and careful an authority as Dr. Bloodgood says, I maintain that even breasts containing big cysts ought to be removed, and I have specimens in which totally unsuspected carcinoma and papillomata were found in them. The existence of papillomata can be diagnosed by a careful examination of the ampulla and ducts of breasts. Very often one ampulla can be felt enlarged and painful, manipulation of which gives rise to a discharge of blood from the nipple. At the same time it must be recognized that I have removed breasts in which large papillomata existed without any discharge of blood from the nipples and in which their presence was quite unsuspected. The duct leading from the tumour-containing ampulla will be found irregularly enlarged and convoluted. My opinion is that the existence of one multiradicular papilloma of the breast is so rare that these signs justify the removal of the whole breast and axillary glands. An unsuspected carcinoma may be present.

Unfortunately, desquamative hyperplasia of epithelium and hyperplasia of epithelium that is not desquamative, very often multiple papillomata, also diffuse hyperplasia intra-elastica, hyperplasia elastica, and hyperplasia extra-elastica, all give rise to somewhat the same clinical signs, which may affect mainly one duct and its acini, or many ducts and acini; or in some instances the clinical appearances may suggest the affection of the whole breast, or of both breasts.

* See *Diagnosis of Early Breast Tumours, based on their Clinical Picture or their Gross and Microscopic Picture at the Exploratory Incision.* By Dr. J. C. Bloodgood of Baltimore.

* See *Hyperplasia of Epithelial and Connective Tissues of the Breast; its Relation to Fibro-adenoma and other Pathological Conditions.*

SIR G. LENTHAL CHEATLE: HYPERPLASIA OF BREAST TISSUES.

FIG. 1.—The hands of a woman aged 72. The skin of the backs of the hands is shiny, smooth, and inelastic. The subcutaneous veins are almost subepithelial. There is profound pigmentation in parts (2), and there is also complete loss of pigment in parts (1) leaving the skin white. The condition is symmetrical and is most marked on the backs of the second metacarpals.

FIG. 2.—Carcinoma of the hand beginning in the skin on the back of the second metacarpal. This patient was a gardener.

FIG. 4.—Cysts containing non-desquamative hyperplasia of epithelium lining a duct at 3, which contains papillomatous and laciform types of proliferation. Acinus cysts 2, 4, and 5, with different degrees of epithelial proliferation. 1, Unaffected cyst.

FIG. 3.—Extensive multiradicular papilloma: 1 and 2 in a duct, which leads directly into the carcinomatous area 3 and 4; 3 and 4 normal ducts.

FIG. 5.—Highly malignant form of same type of tumour represented in a less malignant condition in Fig. 4. 1 and 2 are parts of the same duct, which is distended and its coats ruptured by the contained papillomatous carcinoma. Carcinomatous acini are seen in 4 and 5. 3, Carcinoma infiltrating connective tissue.

The clinical signs to which these various conditions give rise are an enlarged ampulla, and enlarged, painful, and convoluted condition of the ducts, and enlarged and painful lobules of the glands. The question now arises, Can one detach any clinical signs which may be regarded as so serious as to indicate operative interference? I am confident that it is possible. I regard as serious the presence of one painful and tortuous duct which can be felt irregularly enlarged and communicating with an enlarged ampulla, the rest of the same breast and the opposite breast being normal. Two or more ducts in the same state that lead to the same segment of the breast or different segments also indicate a dangerous state of the breast. The question arises, What ought one to do with a breast with these few clinical signs that have been given such vast importance? Unless these ducts lead to a part of the breast to which the skin be adherent, when carcinoma would be certainly present, this breast should be carefully observed during a menstrual period and midway between two periods, and the difference of its appearance noted. Should the signs markedly improve midway between the periods, I should not hesitate to do more than keep the breast under careful observation, and remove the plugs in all the duct outlets and give the breast sufficient support, keeping the nipple free from pressure. It is not possible to say the exact conditions of the ducts and acini in this curable state, but my impression is that they are in an early condition of desquamative hyperplasia of epithelium.

Should the single duct, or the two or three ducts, remain enlarged and painful, or accompanied by a constant discharge of serum or blood from the nipple, and show no sign of improvement by the treatment I have recommended, then I am sure the breast ought to be removed.

Let me describe a breast a surgical friend of mine asked me to see recently. It was the left breast of a woman aged 42, recently married. He had watched the breast for eight months. Once, four months ago, blood had been discharged from the nipple. I found an enlarged ampulla and duct leading to the outer and upper quadrant, and advised removal at once. The ampulla contained a small papilloma and its duct many smaller papillomata, and a small infiltrating carcinoma existed in the peripheral distribution of the duct. No lymphatic glands could be felt. This is a very striking example of the importance that should be attached to the clinical signs disclosed. It is also an example of the presence of papillomata in a duct distribution that contains a carcinoma.

Position during Clinical Examination.

A great deal depends upon an efficient clinical method of examination. A person whose breasts are to be examined should lie flat on her back and a small pillow should be placed behind the shoulder blades to thrust the chest forward and to make the breasts prominent and the axilla more easily palpated. It is instructive to note how much the proper placing of the pillow helps in making a correct diagnosis. I cannot exaggerate the importance of this properly placed pillow.

The contour of the breast should be carefully observed, and any flattening or irregularity of its curvature should be compared with the corresponding part in the opposite breast. A movable dark background renders the curves of the breast more obvious. The ducts and ampulla of the breasts should be carefully palpated by the tips of all the fingers in a row, following the radiating lines of the ducts.

Finally, it must be understood that every nodular breast is not necessarily in a pathological state. A breast may be nodular and ducts made easily distinguishable by the absence of adipose tissue. Here the ampulla and the ducts would be regular in size and the gland painless. But I have seen this normal state diagnosed as being in a state of "chronic mastitis" on account of its nodularity only. This normal nodular breast may be painful when there are irregularities in the pelvic viscera, correction of which cures the breast pains, or it may be painful during the periods and painless midway between the periods. On insertion of a barbed needle into nodules of a nodular breast many of the nodules have proved to be merely prominent fat lobules that contained no glandular elements.

An Address

ON

KINKS OF SURGICAL IMPORTANCE.

DELIVERED AT

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(With Special Plate.)

I HAVE chosen "Kinks of surgical importance" as the subject of this address because such extreme views have been expressed with regard to some aspects of the subject that the time has come when we should try to arrive at a definite opinion about it. The truth is hard to find, and we may well bear in mind Descartes' advice and "Give unqualified assent to no propositions but those the truth of which is so clear and distinct that they cannot be doubted."

I propose to confine my remarks to kinks of the ureter, kinks of the gastro-intestinal tract, and finally with another variety which, it may be, is the most important of all.

In discussing kinks of the ureter we may confine our attention practically to the region of the renal pelvis and first part of the ureter. Kinks of the ureter may be caused by adhesions or lack of support distorting its course, by abnormal blood vessels crossing it, or by undue mobility of the kidney.

In recent years a method of investigation has become available which has thrown much light on the actual conditions present in cases of kinking of the ureter. Pyelograms and ureterograms may be said to have proved or confirmed the following points:

1. When the kidney is in its normal position the upper calyces are opposite the last rib (see Fig. 1), but in some cases the ureter is so short that it would be impossible for the kidney to occupy that position. In some of these cases the kidney is much lower than the normal position (see Fig. 2), but if there is no kink of the ureter nephropexy is not called for, and certainly the kidney could not be fixed high enough to be safe from injury.

2. The kidney may be very loose and liable to injury, but with no evidence of acute kinking of the ureter, which pursues a tortuous course with bold curves, and no acute bends. A kidney so placed is often better fixed out of danger, even though there may be no kinking of the ureter, but the condition must be considered with due regard to any associated ptosis of other viscera.

3. The ureter may be so kinked in nephroptosis that operation is absolutely essential if the kidney is to be saved from gradual destruction (see Fig. 3).

4. Though the kidney be not unduly mobile, the ureter may be kinked by adhesions, or from some developmental or other cause, or by abnormal blood vessels crossing it (see Figs. 4, 5, and 6).

An operation for the correction of a kink of the ureter, with or without undue mobility of the kidney, must remove every cause contributing to the kinking of the ureter, or obstruction of the outflow from the renal pelvis. The operation must therefore include the complete exposure of the renal pelvis and upper part of the ureter, the division of all adhesions tending to the perpetuation of a kink, the division of any abnormal blood vessels obstructing the renal pelvis or ureter, and lastly, in the case of undue mobility, the fixing of the kidney in such a position that the ureter runs a practically straight course.

We must not, however, think of the kidney only. Ptosis of the kidney, usually the right, is sometimes associated with general visceroptosis, often, or probably always, with right-sided ptosis—that is, failure of fixation of the caecum and ascending colon; hence the gastro-intestinal symptoms. This associated visceroptosis must prevent us from directing treatment to the urinary tract only, except in those cases in which symptoms are entirely referable to that tract. Here we see one of the dangers of too much

* The address was illustrated by numerous lantern slides.