A Lecture ON CANCER OF THE BREAST.*

BY
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IN at least one-third of the women who develop cancer it arises in the breast, and in that event the patient's average expectation of life is not more than four years unless she is fortunate enough to detect the tumour at an early stage, wise enough to consult a medical man at once, and brave enough to submit to surgical treatment. I do not suggest that even then she will always be cured of her disease—far from it, for recurrences after surgical operation are only too frequent. But it is probably fair to say that 30 per cent. of early cases get no recurrence after radical operative treatment, and it is certainly a fact that in the remaining cases a well planned operation will generally result in the patient being spared the dreadful misery and discomfort of an ulcerating growth in the breast, the ultimate cause of death being secondary deposits in the chest or abdomen, perhaps as long as ten years afterwards.

In order that the present results of surgery may be improved the co-operation of three parties is essential. The patient must consult her doctor at an earlier stage of the disease, the doctor must make a diagnosis at the earliest possible moment, and the surgeon must endeavour to perform the most scientific and most comprehensive operation that the conditions will permit.

The need for the co-operation of the patient is sufficiently obvious to require no emphasis, but how it is to be obtained is not so clear. If it were possible for every woman to learn that cancer of the breast starts as a little insignificant lump that is always at first quite painless, and that operative treatment offers the only chance of eradicating the disease, it is certain that a very few years would show a noticeable improvement in results.

How is this desirable end to be attained? Instruction at school has been suggested, but, even if feasible, would hardly meet requirements, for after all there are other forms of cancer to be considered. But I do think that more could be done during school life in the direction of teaching the elementary anatomy and physiology of the normal body and in emphasizing the importance of seeking medical advice as soon as any departure from the normal shows itself. Another method is the diffusion of information about the early signs of cancer by means of pamphlets, leaflets, etc., as already done by some medical officers of health, and on a more ambitious scale by the Franco-American Cancer League; but this is an expensive business and appeals to much too small a public. We have, however, in the huge circulation of the daily press a vehicle for propaganda that no one can escape, and if one or more of the daily papers were public-spirited enough to devote an occasional half-column to a clear description of the early stages of the common kinds of cancer nothing but good could result.

EARLY DIAGNOSIS.

But it is to the subject of early diagnosis that I wish to pay special attention to-day, and it is here that the co-operation of the medical attendant is so essential; he is the most important link in the chain, and upon him the fate of the patient largely depends, for it is to him that the doubtful lump is first shown, and it rests with him to decide whether the lump is in fact a lump at all, and, if so, whether it is of any serious consequence.

I see that many textbooks still describe the symptoms of cancer of the breast in the terms I remember as a student over twenty years ago—a hard, irregular mass infiltrating the breast, causing retraction of the nipple, and accompanied by enlargement of the axillary glands.

We need not concern ourselves with such cases as these except, perhaps, to emphasize the importance of never waiting until such unequivocal signs declare themselves. It is the small and insignificant tumours that must engage our attention—they provide most of our difficulties in diagnosis, and these difficulties increase, I find, for I am certainly getting a larger proportion of quite early cases than I did

some years ago. The sort of case I have in mind is a rounded mass, perhaps a quarter of an inch in diameter, movable in the breast, with no enlargement of axillary glands, no retraction of the nipple, and with no available history beyond the description of its accidental discovery the day before.

I am often asked by students whether there is not some one sign in the diagnosis of breast cancer upon which they may pin their faith and so simplify their task. There is, of course, no golden rule, but still there is a symptom which, although it is not of universal application, is of such overwhelming significance that I put it first, and a long way first, in diagnostic importance. I refer to adhesion between the growth and the skin overlying it—not the coarse and obvious infiltration met with in advanced cases, but a much more delicate involvement, resulting in a faint dimpling of the skin which is often of so slight a degree that it may only be visible after careful examination in suitable conditions of light. In its earliest stages it can be made to appear by grasping the breast on each side of the suspicious nodule and trying to push the skin away from the tumour. By then looking *along* the surface of the breast it may be possible to perceive slight irregularity in the contour not hitherto apparent. If this sign be evident—and it nearly always is when carefully looked for—I am convinced that a definite diagnosis of malignancy may be safely made with the utmost confidence irrespective of the presence or absence of retraction of the nipple, alteration in the size and shape of the breast, enlargement of glands, or any of the other classical signs of cancer. One is not likely to be misled by the adhesion of the scar of an old abscess or old operation wound, nor by the infiltration of recent inflammation.

On the other hand, absence of adhesion to the skin does not necessarily indicate that the tumour is benign, for the growth may be too small, or, if the breast be large and fat, the distance to the skin may be too great. In breasts of ordinary dimensions I have seen it present with a mass of growth no larger than a cherry-stone, but in smaller tumours than this it is not perceptible, and I think the difficulties of clinical diagnosis in this range of size are insuperable.

Mistakes in Diagnosis.

It is worth remembering that when mistakes are made in diagnosis they are nearly always in the same direction. An early cancer, because it is so small, so painless, and so harmless-looking, is thought to be a simple cyst or simple tumour, and is either left alone to await events or at most is locally excised. On two or three occasions I have been asked to perform the radical operation upon breasts from which had been removed small tumours thought to be innocent but subsequently proved to be malignant by microscopic examination.

I have also seen a woman of 30 with metastatic cancer of the spine from whose breast a small "adenoma" had been removed two years previously, and two other patients with metastatic fracture of the femur, both of whom had primary tumours in the breast which they had been told were of no importance.

Tiny cancers, tiny adenomata, and tiny cysts are dangerously alike. Cysts may be excluded by puncture with a hypodermic needle, but I know no way of distinguishing the characters of very early solid tumours, and in these cases it is our bounden duty to excise the mass and determine its nature. A surgeon who has familiarized himself by long training in museum and laboratory with the look and the feel of pathological tissues will generally be able to decide the nature of the case as soon as he has removed the doubtful tissue and cut it across. In a few cases he may find it impossible to come to a conclusion, and in these a microscopic section must be cut.

Frozen Sections.

I have never been able to convince myself of the value of rapid frozen sections in such cases, for, if an experienced surgeon is in doubt as to the nature of a tissue when he has a piece of it lying in his hand, it is almost certain to prove to be something out of the ordinary, and he is unlikely to get material help from sections prepared and considered by the rapid method. I feel that it is more safe to have the doubtful tissue suitably prepared by more deliberate methods and adjudicated upon in the seclusion of the pathological laboratory. Frozen sections have a very definite value in certain contingencies, but not, I think, in the differential diagnosis of obscure cases.

When faced with a difficult breast case it is always worth while considering the question of probability in relation to

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diagnosis. Here is an analysis of the last hundred consecutive cases of primary breast disease that I have seen in private practice, and I think you will be surprised to see that I have more cases of malignant disease than all other breast diseases put together.

One Hundred Consecutive Cases of Breast Disease.

Malignant—				
Carcinoma	...	...	...	58
Sarcoma	...	...	...	1
				59
Non-malignant—				
Fibro-adenoma	...	...	...	2
Duct papilloma	...	...	...	3
Sebaceous cyst	...	...	...	2
Tuberculosis	...	...	...	1
Chronic abscess	...	...	...	1
Galactocele	...	...	...	1
Solitary cyst	...	...	...	15
Cystic disease	...	...	...	1
Chronic mastitis	...	...	...	7
Subacute mastitis	...	...	...	8
				41

This enormous preponderance of cancer cases is no doubt partly to be explained by the fact that a certain number of them have only been sent to me for confirmation of diagnosis, for, when a woman is told that she has cancer of the breast by one surgeon, she often quite naturally asks to see another in the hope that she may get a different opinion. But in spite of this and other factors which tend in my list to put the cancer incidence too high, the general conclusion is inevitable that cancer is the commonest breast disease, and that a doubtful tumour in the breast, no matter how small and insignificant, is by the law of probability much more likely to be cancer than anything else.

Mastitis.

Another point arising out of my analysis that occasions some surprise is the small proportion of cases of chronic mastitis that I see. So much has been written about chronic mastitis that there is apt to be a totally false impression as to its frequency. I admit that it is a matter of some difficulty for me to obtain exact figures as to its relative frequency, for the cases attending my clinic at the Cancer Hospital obviously undergo as much or nearly as much selection as those in my private practice, and any statistics based upon them would certainly underestimate the proportion of cases of mastitis; but none the less I have come to believe that it is a relatively uncommon disease—almost certainly less common than cancer itself. The whole subject of mastitis is admittedly one of great difficulty and is fruitful in controversy; in fact, I am not sure that even yet there is any general consensus of opinion among surgeons and pathologists as to what really are the clinical characters and pathological appearances of chronic mastitis. It appears to me that there is often some confusion between chronic interstitial mastitis and subacute mastitis, although I believe them to be quite separate clinical entities with very different characters.

Subacute Mastitis.

Subacute mastitis is characterized by more or less sudden onset and by involvement of one and only one sector of the breast; it is always painful, it is generally unilateral, and it may be caused by such minor injuries as accompany games of golf or tennis or by vigorous spring cleaning. It is much more common in women with pendulous breasts, and is certainly predisposed to by the absence of suitable support for the breasts. It can generally be quickly cured by firm bandaging and the local application of belladonna, and its recurrence may be avoided by wearing a suitable bust bodice. In this disease cyst formation is conspicuously absent.

Chronic Mastitis.

Chronic interstitial mastitis, on the other hand, has an insidious onset and severe pain is generally absent; at most there is a slight aching. It is more often bilateral than subacute mastitis; it may affect more than one sector of the same breast, and I think it affects the nulliparous as frequently as the multiparous breast. It is probably closely associated with the involution of the breast accompanying the menopause, but it is often found in younger women.

Cyst formation is a very general feature of the disease, and

the cysts may be large or small, many or few, but it is the exception not to find some cysts, possibly not larger than millet seeds.

If the cysts are numerous and large there is no room for argument about treatment. The breast or breasts should be removed by simple subcutaneous amputation, the nipple and surrounding skin being preserved by carrying the incision along the outer margin of the breast, but great care is necessary to avoid leaving an ugly puckered surface when this method is used. In thin patients I have given up employing it and prefer a straightforward amputation.

Solitary Cysts.

But it is quite common to meet with cases where there is but one solitary cyst in the breast. My own practice in these cases is to puncture the cyst and aspirate the contents. This is quite easily done with a serum syringe and hypodermic needle, and the cyst usually collapses so completely that nothing whatever can be felt of it.

It is possible, of course, that such a solitary cyst may be the herald of a general mastitic change which will eventuate in multiple cyst formation, and it is true that on a few occasions, after tapping the original cyst, I have subsequently watched the development of universal cystic disease which has required amputation of the breast. But this is certainly not the general rule, for my experience has been that most of my patients have had no further trouble, even after many years. The fluid in these cysts varies from a pale straw colour to brown or green, with perhaps cholesterol crystals floating in it, and all such cases are quite benign. But occasionally it will be found that the fluid is consistently blood-stained, and in these cases the cyst should be removed and carefully examined in case a growth has developed in its wall.

But if the case is simply chronic mastitis without obvious cyst formation, what line must be taken? Does chronic mastitis lead to cancer? Many experienced surgeons think it does. They believe it so firmly that they advise amputation of a breast so affected in order to be on the safe side, as it were. I cannot believe that the evidence is so conclusive as to lead us to offer this advice to our patients, and I strongly suspect that far too many breasts are sacrificed to this branch of prophylactic surgery. We should only allow ourselves to be guided by definite scientific evidence, and what is the evidence? It is stated that a large number of breasts removed for cancer show chronic mastitis as well, and the deduction is too readily drawn that the mastitis caused the cancer. Looked at from another point of view, one might equally well deduce that cancer causes mastitis; and in fact I believe it does—that is to say, I believe that chronic degenerative changes frequently take place in the breast tissue surrounding a malignant growth and that these changes are microscopically indistinguishable from the changes we are accustomed to describe as chronic mastitis.

From a purely pathological point of view the subject is obviously open to considerable discussion, but if we consider it from the clinical aspect the position becomes more clear.

If mastitis is indeed a common precursor of cancer, then we might expect that surgeons of experience would occasionally see patients with cancer whom they had previously treated for mastitis; or, conversely, it might be expected that some of the cases treated for mastitis would ultimately return with cancer. But it may be argued that it is scarcely likely that patients would return to the same surgeon. If this be true, then one ought to see patients with cancer who give a history of having been treated for mastitis some years previously by another surgeon. This has not been my own experience, nor, so far as I can gather, has it been the experience of those of my colleagues with whom I have discussed the question. Of all the cases of cancer of the breast that I have seen I can only find one where there was a definite history of previous mastitis. I saw this patient myself five years ago for mastitis and she returned last year with cancer. One would have expected mere coincidence to have provided more examples than this in any large group of cancer cases, apart altogether from any causal relationship. I am strongly of opinion that the bugbear of chronic mastitis as the precursor of cancer of the breast has been greatly overdone. It has even been suggested that the occurrence of mastitis resulting from intestinal stasis not only goes far to explain the frequency of cancer of the breast, but also explains its

greater frequency upon the left side owing to the fact that this particular type of mastitis appears to develop mainly in the left breast!

Side Affected.

It is certainly true that all the great collections of figures relating to cancer of the breast appear to indicate that it is more commonly met with on the left side, but the difference is less than 2 per cent. Were it not that this slight disproportion is so constantly reported by all observers, one would imagine it to be a mere coincidence; while, on the other hand, were it really due to any fundamental difference in the cancer liability of the two breasts, one would expect a much greater disproportion. I have often puzzled over this point, but it happened recently that two cases of cancer of the left breast were sent to me in quick succession, in each of which the doctor had accidentally discovered the growth while examining the heart. This must be the explanation of the discrepancy, for the vast majority of the published figures relate to operation cases, and it is, I think, reasonable to suppose that the accidental detection in this way of a small number of left-sided cases which might otherwise reach the inoperable stage without discovery fully accounts for the small apparent difference so constantly recorded. It would appear to be unnecessary, therefore, to fall back upon the left-sided mastitis of intestinal stasis—if there be any such thing—as having any very direct bearing upon the subject of cancer of the breast.

The most casual study of much recent literature relating to the breast and its diseases and minor ailments seems to indicate a fundamental lack of imagination or perspective. One is sometimes asked to believe that a trivial patch of mastitis or the presence of a minute cyst almost necessarily indicates the imminent onset of cancer. As I am not aware that such conditions are always or even generally confined to one breast, are we to be prepared to tell a patient to have both her breasts cut off merely to be on the safe side? We must preserve some sense of proportion and try to recognize that any evidence of the existence of a well defined precancerous condition in the breast recognizable by clinical or pathological methods is not yet established—whether in the shape of mastitis, cysts, or adenomata. I strongly feel that, unless or until we have unequivocal evidence to guide us, prophylactic amputation of the breast for mastitis is a thoroughly bad and unscientific proceeding.

TREATMENT.

The Radical Operation.

With regard to the radical operative treatment of cancer of the breast, I do not propose to discuss the details of the actual operation, for you all have many opportunities of seeing it performed and observing the various minor differences of incision, dissection, and technique favoured by individual surgeons; but I may say that, as one who is quite convinced of the value and importance of Handley's observations on lymphatic permeation, I endeavour to plan my operations upon this basis.

Not the least important matter is the choice of anaesthetic, and, after trying all available methods, I have come to the conclusion that for all ordinary cases ether, or a mixture of chloroform and ether, administered by some method which warms the vapour before delivery, seems to give the most satisfactory results; but in feeble patients who are bad risks owing to cardiac or respiratory complications or extreme old age I rely mainly upon local anaesthesia.

Thanks to the skill of my anaesthetists I have never yet lost a breast case from any cause whatever except, of course, recurrence of the disease.

Radium and X-Ray Treatment.

It is impossible to leave the question of the treatment of cancer of the breast without discussing the value of radium and x-ray treatment.

Radium.—With regard to radium there is very little to say, for the results obtained are not worth consideration. This is hardly a matter for surprise when we remember the extent of the area to be treated and the impossibility of obtaining and applying radium in sufficient quantity to influence the disease.

X rays.—In x rays, however, there is no question that we have a valuable means of relieving pain, encouraging hope, and prolonging life. They will in some cases promote the

shrinkage of ulcerated masses, and in others will cause the temporary or even permanent disappearance of superficial nodules. I refer now to x rays as produced by the ordinary methods in common use, and every radiological clinic possesses serial photographs showing unmistakable evidence of the value of this form of x-ray treatment in cases of breast cancer.

Deep Therapy.

During the last two years a new technique has been evolved in Germany dependent upon the use of much more powerful apparatus, which is actuated by much higher voltages and emits a much harder and therefore much more penetrating x ray. It was hoped—indeed it was widely claimed—that this harder type of ray when delivered to the diseased part in appropriate quantities would destroy the cancer cells in their nests, as it were, with no—or at any rate no serious—injury to the surrounding healthy tissues.

As soon as the opportunity offered I arranged to give the method a trial, and about six months ago three cases of recurrent cancer of the breast were carefully selected. They were treated with the latest apparatus under the best obtainable conditions by a radiologist of the greatest ability. In each case the so-called full cancer dose of three hours or so was given, and now at the expiration of six months these are the results:

Case 1 feels better, but numerous skin nodules have appeared in the treated area. There is no improvement in the other local manifestations of the disease.

Case 2 felt strong and well until the treatment, but has suffered intolerable pain ever since it was applied. There is no improvement in the local condition, which in general has progressed except for the shrinkage of a small subcutaneous nodule.

Case 3 is unchanged except for the development of a suspicious nodule in the skin of the treated area.

These cases were done six months ago, and in those days—for events move quickly in the x-ray world—it was hoped that one exposure of three hours or so would suffice. The most that I hear claimed by my radiological friends to-day is that, given early cases of breast cancer free from metastatic growth, good results may be expected from repeated treatment—which is somewhat where we were before Erlangen.

I should like to emphasize the fact that it is only with regard to cancer of the breast that I am expressing my opinions, for my personal knowledge and experience of the results obtained in cancer of other organs is insufficient to form a judgement.

We have had our apparatus at the Cancer Hospital in full work for a few months only, and the tendency has been to use repeated moderate doses spread over an appreciable period of time rather than massive doses administered at a single sitting. However, we ought soon to be in a position to form a definite opinion, and we may find that it is only in certain kinds of cancer that useful results are to be expected from deep therapy. If there is any real analogy between x rays and radium, my experience with the latter would certainly tend to support such a view.

As I have already stated, I think radium useless in carcinoma of the breast, and the same applies to many other forms of cancer; but in certain situations, notably the cervix uteri, it is undoubtedly of the greatest value. Moreover, I find that I am improving my results in the cervix and elsewhere by using smaller quantities of radium but for very much longer periods, the tubes or needles being buried in the growth for days or weeks at a time. But even then there is no regularity in the reaction.

Recent pathological research appears to indicate so strongly a separate specific cause for each form of cancer that it is conceivable that further investigation may suggest the possibility of each form of cancer requiring its own specific remedy and perhaps its own specific wave-length—who knows? It is just possible that we may after all discover that x-ray technique has been developing in the wrong direction, and that the radiologist who is constantly striving after a harder and more penetrating ray is not very different from the surgeon who endeavours to improve his results by employing a longer, a stronger, and a sharper knife.

Finally, let me say that, if I have unwittingly underrated any man's achievements in the field of x-ray therapy, you as members of the Fellowship of Medicine—to whom all doors are open—should have abundant opportunities of correcting my estimate of the present position of deep therapy in the treatment of cancer of the breast.