An Address

ENTITLED

SOME CLINICAL FACTS REGARDING MAMMARY CANCER.*

BY

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GENTLEMEN,—I am very sensible of the great honour you have done me by inviting me to address you, but now, when I begin the task, I feel that many of you may be disposed to regard the subject which I have chosen as a somewhat trite and threadbare theme. It is true that worldwide attention is being devoted at present to all considerations regarding cancer, in the hope of its real cause being discovered, as has already been done in comparatively recent years in the case of tuberculosis, osteomyelitis, and many other infective diseases. In this respect the whole medical world is on the tiptoe of expectation. The researches conducted, however, largely concern the pathological aspects of the subject, and you will agree with me when I say that, in the investigation of any disease, fundamental and important truth is best sought by considering the results of pathological study along with the facts of clinical observation. Neither department of work is self-sufficient; each tends more or less to explain, sometimes to confirm or to refute, inferences drawn from the other. While, therefore, pathologists are hard at work, it is equally incumbent upon those whose experience has been wide to make known in some way such facts of that experience as may appear important, even although they may not be new. What has impressed itself upon the observation of one who, during a long and busy professional life, has always had under his care patients suffering from mammary cancer may at all events, I hope, arouse some interest in the minds of those of you whose familiarity with that disease has been neither so long nor so constant.

The present clinical teaching in regard to cancer of the breast may, I think, be fairly summarized thus: It is a disease which probably invades the body from without, and is at first strictly of local character and of local consequence. If removed at a very early stage—that is, when the tumour is recent and still small—by an extensive operation definitely planned and carried out, a satisfactory cure may follow. Should no return of the disease occur within a period of a few years—say three to five—this result may be considered as fairly assured.

To the general tenor of such doctrine no one is now likely to offer any great objection; but, at the same time, as I shall endeavour to show, experience proves that many of these statements are contradicted, from time to time, by the progress and issue of individual cases. The disease is one of the most contradictory of all diseases. In almost all respects there is apt to be want of uniformity in the behaviour of different cases, even when they strongly resemble each other in the first instance. These statements I shall endeavour to substantiate, entirely by reference to clinical experience.

CASE I.

In the end of July, 1900, Mrs. E., a lady 67 years of age, was sent to consult me by Dr. Sinclair of Bo'ness in regard to a small, rounded and hard lump under the pectoral muscle at some distance below the right clavicle.

History and Operation.

Twenty-seven years previously the right breast had been removed, when she lived at Berwick-on-Tweed, by Dr. Philip MacLagan and Dr. Allan Jamieson, on account of a hard growth which it contained. It was evident from the size and situation of the scar that the axilla had not been interfered with. Dr. Allan Jamieson (now of Edinburgh) has informed me that he remembers this patient's case well, and although he cannot recall whether any histological examination of the tumour was made after its removal, he can say that no doubt existed in their minds at the time that they were dealing with a cancer. The present little growth lay, as I found when I removed it, under the pectoral muscle and much nearer to the scar than to the clavicle. It was very movable, but on incising the skin

I found it was slightly attached to the under surface of the muscle, and so I removed a considerable portion of the muscle with it. The cellular tissue around it was quite loose, and I lifted out the growth with my fingers passed beneath it. I could feel no other nodule and no enlargement of axillary glands. Whether wisely or not, I contented myself with the removal of the growth, leaving the armpit still untouched. The growth was about the size of the distal phalanx of a finger, and had been growing since it was first noticed by the patient nine months before. It was very firm but not extremely hard.

Histological Examination of Tumour.

A histological examination of it was made by my friend Dr. A. R. Ferguson, at that time assistant to Professor Muir of our university, and now Professor of Pathology in the Government School of Medicine at Cairo, and he reported as follows:

"Lady, aged 67. Amputation of mamma twenty-seven years ago for cancer (?). The nodule of tumour tissue in the situation of mamma proves malignant. It is so richly cellular as to cause difficulty at first sight in diagnosis between carcinoma and sarcoma. I believe it, however, to be carcinomatous."

After-History.

On inquiry recently made, I find that Mrs. E. survived my operation about five and a half years. Under date December 9th, 1908, her son-in-law, with whom she resided, writes, regarding her illness and death: "As far as we know, the disease did not reappear. The nurse told us that Mrs. E. spoke about a lump somewhere, but the information was not sufficient for us to say anything about it. She died two years ago from congestion of the lungs." I have since also heard from the medical man who attended Mrs. E. in her last illness—in the neighbourhood of London where she latterly lived. He states that he "occasionally but rarely saw her chest, as she had the greatest objection to any examination of the scars." "I think," he adds, "I should have found the suspected cancer had it been present to any extent."

It is possible that the chest ailment which proved fatal in the old lady's case may have been due to cancer, but, in the absence of *post-mortem* examination, one must remain in doubt.

Now let us consider what lessons may be learned, what speculations may reasonably be entertained, from reflections upon such a case as this one. And, first, let us ask, Is this late recurrence of cancer, nearly thirty years after the removal of the primary tumour, a fresh development of the disease and quite unconnected with the original growth, or was the nodule which I removed in 1900 an offspring of that contained in the breast amputated at Berwick-on-Tweed in 1873? In other words, Was the recurrence a reinvasion or a residue? The very long period of absolutely good health and freedom from any new sign of the disease is apt to make any one, who has not had repeated experiences of late recurrence, at once conclude that the fresh outbreak is an independent and new invasion. What is more likely than that a woman who has been affected by this disease at 40 years of age, and has been, as we think, completely cured, should again develop it before she ends a long life? It would not surprise us if one of her sisters or daughters were to become affected with the disease, and why not herself, who has already proved her proneness in that direction? That we do occasionally meet with examples of cancer arising a second time in the same individual, and where it is later has clearly no relation at all to its earlier manifestation, no case could better illustrate than the following:

CASE II.

On September 28th, 1896, Mrs. B., aged 44, was admitted under my care in the Western Infirmary of Glasgow with a hard tumour of the right breast, and a few days afterwards I removed the breast and the contents of the armpit. On histological examination the tumour was found to be a typical cancer of the scirrhus type. She went home in three weeks quite well.

On August 19th, 1908, she was readmitted, having enjoyed perfect health from the date of her last residence in hospital until about six months ago—that is, for eleven and a half years. At that time she began to experience much constipation and the necessity for great straining at stool. Shortly after this she also began to be troubled with frequent small stools containing blood and mucus, and appeared to be losing flesh. Digital examination of the rectum showed a hard prominent mass springing from the right side and ulcerated on its surface. The tumour was not markedly fixed and was situated at about the level of the cul-de-sac of the vagina. In my absence on holiday, Dr. George H. Edington, one of the assistant-surgeons of the hospital, excised the tumour, uniting by suture the cut and apparently healthy ends of the bowel. Microscopic examination showed that the growth was an adeno-carcinoma.

No one will doubt that this attack of cancer was an independent development, considering the irrelevancy of the rectum to the mamma, as regards the question of secondary infection. The determination of whether a

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late recurrence of mammary cancer after operative removal is to be regarded as directly connected with the first manifestation of the disease or not is a much more difficult matter when the site of the recurrence is in so closely co-related an organ, in this respect, as the other breast.

CASE III.

In January, 1896, I was asked to see Mrs. D., a lady then about 50 years of age and of very stout habit of body, with a tumour of the right breast, which there was no difficulty in recognizing as a carcinoma. There was evident but limited cancerous infection of the lower glands of the axilla. Examination revealed no sign of the disease elsewhere. She had been conscious of the presence of this lump in her breast for at least a year. On January 29th, 1896, I removed the breast and axillary contents. Microscopic examination showed that the tumour was a scirrhus cancer, and that the disease had already reached some of the lower axillary glands.

She remained perfectly well for ten years and eight months, when she discovered a precisely similar lump in the remaining breast. This I saw with Dr. Roxburgh of Pollokshields on October 9th, 1906, shortly after its discovery by the patient. On October 16th I removed the breast and axillary contents.

I saw this lady recently (December 24th, 1908). I found her in perfect health, and could not detect, on either side of the body, any indication of recurrence.

Such a case as this I am inclined to regard as an example of a second invasion of the disease. I am well aware—too well aware—how very often, and sometimes how very soon, the second breast becomes infected from the first by way of the lymphatics, but almost always with evidence of recurrence in other situations—in skin, subcutaneous space, bone or cervical glands. But here we had the disease appear in the second breast, there having been an absolute immunity of more than ten years after the operation on the first breast. From that date it is now more than thirteen years, and the lady still continues in perfect health, and with no sign of cancer in any part of the body. In these two women cancerous disease appeared on a second occasion of their lives, but in both of them in a part of the body which is a most usual and well-known site of its primary manifestation—namely, in the rectum and breast respectively. It is quite otherwise in the case of Mrs. E., to whom I first referred; and the fact that the tumour grew under the pectoral muscle is quite fatal to the supposition that it originated there, or, in other words, that it was a primary growth. It must therefore have been a residue, probably in some lymphatic vessel traversing the subpectoral fascia. There it lay for seven and twenty years, obsolete and inactive, but not incapable of recrudescence and rapid growth under conditions and circumstances of which we have no knowledge. We neither understand its long sleep nor its awakening. But I shall narrate another case which illustrates the same power of dormancy and revival in a microscopic piece of cancerous epithelium or some germ of cancer in a situation in which the occurrence of primary cancer would be, if I may be permitted so to express it, still more impossible.

CASE IV.

In 1894 I removed the left breast of Mrs. F., aged 40, a patient of Dr. Anderson of Glengarnock, on account of scirrhus cancer. This diagnosis was verified by microscopic examination. She was a farmer's wife, and remained in excellent health until 1903, performing all the duties of her household and of a large dairy. Early in that year she began to complain of rheumatic pain in the left hip and thigh. This became so disabling that she was compelled to take to bed in March and put herself under the care of her doctor. On getting out of bed one day the left femur fractured. She died four months afterwards.

At the time when the fracture occurred Dr. Anderson wrote to me as follows:

"I can discover no trace of cancer in the breast or elsewhere. The situation of the operation wound is marked by a soft and beautiful scar, and there is nothing in the way of disturbance of function anywhere to point suspicion."

Dr. Anderson has since further informed me that she died from gradual exhaustion, and that there never was any evidence which he could discover of further dissemination to lungs, liver, or bone, nor were there any nodules on the surface of the body.

In this case some fragment or germ of cancer—whether carried, as Handley believes, by lymphatic permeation or by the blood stream does not matter—obviously resided for nine years or thereby in the marrow of the femur and made no sign. Then, wakening up to activity, it increased, until by quick growth it gave rise to pressure, to destruction of the bone, and to spontaneous fracture. Unfortunately, neither in this case nor in that of Mrs. E. was there any

post-mortem examination; but so far as clinical signs were concerned there was no evidence elsewhere of the disease.

A consideration of facts such as these leads us to recognize how unwise it is to regard patients who have been operated on for mammary cancer as permanently cured because they remain free of any indication of recurrence of the disease for three, four, or five years. Nor has the remote uncertainty of result, even when for many years the patient has remained in excellent health, been entirely removed by the more extensive operations which have obtained since, for instance, Mrs. E. was operated on. She had the breast, with some of its overlying skin, alone removed. Not even the axilla was interfered with, and yet she remained perfectly well for twenty-seven years. We are apt to forget that good results used to be occasionally obtained even by such a limited operative procedure, and the younger surgeons of to-day seem to believe that by no other than a very extensive operation is it ever possible to prevent an early recurrence. But I well remember, when a student of the old college in the High Street of Glasgow in the early Sixties, that Mr. Lister, no doubt keeping in view the experience of Mr. Syme, used to teach us that if the entire breast with the nipple and such overlying skin as seemed necessary were removed, freedom from the disease might, in certain cases, be long enjoyed and the patient live, perhaps, until some other disease put an end to life. Most other teachers were at that time, on the other hand, fond of declaring that every case of removal of the breast was necessarily followed by comparatively early recurrence and death, and they tried to dissuade patients from submitting to operation. In this connexion I was interested to read, in the *BRITISH MEDICAL JOURNAL* of April 15th, 1905, a letter by Dr. A. W. George, headed *Death from Cancer Twenty-two Years after Primary Operation*. The letter was as follows:

I have recently lost a patient whose case is, I think, worth placing on record. She was a maiden lady, one of a large family, in which a strong tendency to cancer seemed to exist. An elder sister, also unmarried, died from cancer of the uterus, while a younger sister, also single, died of this disease, primarily, of the stomach. At the age of 50 my patient had the right mamma removed by the late Mr. Durham; the axilla was untouched, and for seventeen years there was no recurrence. Five years ago a small nodule was discovered just below the scar; this was removed, and a microscopic examination showed it to be a true scirrhus cancer; a little more than a year later another nodule was removed. About the same time the inner end of the scar became gradually fixed to the chest wall by a deep growth too firmly fixed for removal; this slowly increased till it threatened to ulcerate. Somewhat later Roentgen rays were tried, and, for a time, seemed to check the rapidity of growth. Finally the skin ulcerated, the tumour sloughed, leaving a large malignant ulcer, which spread with a threatening of hæmorrhage occasionally, the patient emaciating and succumbing to exhaustion at the age of 72. At no time was there any sign or symptom of a secondary new growth, nor was it even necessary to administer sedatives, as the disease was painless throughout.

Here, then, are at least two instances of patients surviving for prolonged periods after cancer of the breast was removed without even the axilla being touched—Dr. George's patient for twenty-two, and Mrs. E., whose case I have detailed, for thirty-three years. I accentuate this fact not to deprecate more extensive procedures—very far from it—but merely to offer a contradiction to the belief that no good result is possible without them. Like all other surgeons, I have now for a great number of years in every case cleared out the entire contents of the armpit and removed the breast, with more or less of overlying skin, in one continuous mass. These complete operations have undoubtedly increased the number of our so-called "cures"; and it may be hoped that the still more extensive operation of removing also the pectoral muscles, and perhaps the upper part of the anterior layer of the rectus sheath too, as recommended by Mr. Handley, with the view of preventing epigastric invasion, may result in even more gratifying progress. My own experience and, I should think, all other experience is still too recent to admit of any positive conclusion in this respect. But I have been long satisfied that whether we operate, as we think, early, or whether we operate obviously late in the disease, whether by limited or extensive removals, we must remain uncertain of our results. If we escape early we may still have late recurrence. Our patients may live for

many years and die of some other ailment, and these are the only cases to which we are entitled to apply the word "cure," unless, indeed, we may safely do so to those who live for more than thirty years after operation and remain well. I was much interested to read in the *Epitome of Current Literature in the BRITISH MEDICAL JOURNAL*, October 5th, 1907, similar views quoted from a paper by Bircher in the *Zentralblatt f. Chirurgie*, No. 26, 1907. He there states that the hopes that by modern methods a permanent cure of malignant disease might be effected have been realized only to a slight extent. Instances have been recorded of cases remaining well for ten, twenty, or even more years, but even in cases of this kind there can be no certainty. Statistics prove that retarded relapses occur, in spite of Volkmann's assurance of definite cure after freedom from recurrence for three years. They occur most frequently in the first decennial period after operation—more rarely in the second—and in the third they have been very seldom observed. Hirsch has reported a case in which the patient remained free from recurrence during twenty-five years; while Boeckel and Verneuil each records a case of like freedom during a period respectively of twenty-nine and thirty years. Bircher himself details an interesting case in which the disease appeared again in the scar twelve years and eight months after operation. This was removed, but five months later death took place from metastasis in the liver. He raises the question whether such an experience is an example of real recurrence or of fresh disease, and is of the opinion that such an attack cannot be explained by the view of a local disposition to cancerous disease, as the sudden outbreak of local recurrence and of metastasis must have been due to the influence of some factor favouring the proliferation of latent germs.

But if the character of the operation performed in respect of its extent is not always the explanation of a subsequent prolonged freedom from recurrence, the statement that early operation will ensure success is equally fallacious, and that for a good reason—namely, because it is impossible to know when we operate early and when we do not. Every modern surgeon operates as soon as possible after he has been consulted, and we all desire that patients should consult us at once, when they have found the slightest hardness or tumour in the breast. But clinical experience teaches clearly that the small size of a growth and its recent discovery by the patient do not necessarily mean that it is of recent origin. Nay, more, some cancers of the mamma shed themselves freely into the lymphatic system while still too small to be discovered even by the expert touch of the skilled surgeon, while not very seldom growths of considerable size, and which have been known to the patient for months, have not yet been disseminated as far as the axillary glands, as may be proved when these glands are afterwards removed and histologically examined. In this, as in so many other clinical respects, different examples of the disease constantly contradict one another.

CASE V.

Some years ago I was consulted by a lady from whose armpit a tumour had been removed by another surgeon nearly a year before. I was told it had been found on examination to be of a cancerous character. She was sent to me on account of a small hard tumour of the corresponding breast, which she had recently discovered. She was quite clear that at the date of the former operation nothing of the sort existed or, at least, could be felt. On removing the breast and the contents of the armpit, examination proved that carcinoma existed in both. What the ultimate result was as regards recurrence or otherwise I do not know, as I early lost sight of the patient.

CASE VI.

In the autumn of 1904 an elderly lady, who was then on a prolonged visit to Scotland, consulted me on account of symptoms due to a pretty extensive local recurrence of cancer after removal of the left mamma. The history of her case was as follows: Towards the end of 1901 a tumour of the lowest part of the armpit was removed by a distinguished London surgeon. It had been in existence for a few months. The surgeon made a careful examination of the mamma, but found nothing amiss with it, and contented himself with the removal of the recognizable disease. In October, 1903, a friend of mine in the south of England, who is a well-known and experienced operator, removed a recurrence from the neighbourhood of the scar. The patient soon returned with a second recurrence, and he advised removal not only of that but also of the breast, although on neither occasion did a careful search detect any tumour in it. To this, however, she would not then consent, and, perforce, he contented himself with the removal of the recurrent nodule of

cancer. On March 17th, 1904, however, on her once more seeking his aid on account of return of the disease near its old site, he removed the breast and cleared out the axilla. A small tumour was contained in the breast. I saw her in the autumn of the same year, when there were present great oedema of the limb, scattered subcutaneous and cutaneous nodules in and around the scars, with hard masses in the infraclavicular and supraclavicular regions. The particulars I have given of her case were communicated to me by my friend, who had recommended her to consult me, distance preventing her from having recourse to himself. In a correspondence which subsequently passed between us, he wrote, "I cannot explain the condition in the old lady; but there remains the fact that neither — nor I, later on, could feel any evident disease in the breast till recently I removed it."

CASE VII.

Quite lately (November 13th, 1908) a patient was admitted to my female ward in the Glasgow Western Infirmary, whose case illustrates the same clinical precedence in the observation of the secondary axillary cancer before the primary mammary tumour is large enough to be demonstrable. She was a woman of 56 years of age. About a year previously she noticed a swelling in the right armpit. She thought it was a "gathering," and some time afterwards the skin over it became discoloured and ultimately burst. It discharged no "matter," but bled very freely. Neither she nor her doctor discovered anything wrong with the breast. But about two months after this she observed a small but very hard "swelling" in the breast. It had since grown larger and become the seat of occasional shooting pain. On examination I found a very large, hard and fixed mass in the axilla, which had invaded the overlying skin, giving it a crumpled and puckered appearance. Three of these puckers or long creases in the skin ended in an ulcer attached to the glandular mass and covered with a dry scab. The tumour of the breast was very much smaller than that of the armpit. The supraclavicular glands also constituted a hard tumour.

These and other cases have convinced me that a mammary cancer may produce extensive involvement of the lymphatics even before it is of a size which renders it demonstrable. *A fortiori*, a tumour which is very small and has only recently attracted the patient's attention and caused her to seek advice must not be regarded as necessarily a very favourable one for operation. An early metastasis or local recurrence often follows operation in such a case, as I know by repeated experience, whereas sometimes a relatively large mammary tumour, whose existence may have been known to the patient for at least a year, may be followed after operation by a long immunity from recurrence, as in the case of Mrs. D. which I have narrated. This is only another instance of the contradictions which one observes in the clinical facts of different instances of the disease.

I was interested to find lately that another surgeon has been drawing attention to this same fact. In the *Transactions of the American Surgical Association*, vol. xxv, page 78, Halsted of Baltimore writes:

I have twice seen extensive carcinomatous involvement of the axilla due to mammary cancer, which latter in neither instance became palpable or demonstrable for a considerable period after the axillary glands had attained conspicuous dimensions. In each case the axillary tumour had been removed, in one of them a year before and, in the other, perhaps two years prior to my first examination, which, though made in the most careful manner, failed to find the slightest evidence of cancer of either breast. In the course of a few months thereafter the mammary disease manifested itself in both patients.

Facts such as these prove that, in tumours of this character, small size and recent origin are by no means convertible terms. The little secondary cancerous tumour which I removed from the subpectoral space in the case of Mrs. E. was not bigger than the last phalanx of a little finger, and yet we know that twenty-seven years had passed before it attained to that size. How long a small primary tumour may have been in the making or how soon it may begin to disseminate itself, it is impossible for us to know. Every surgeon ought, therefore, to operate as soon after the discovery of a mammary tumour as he can, removing the whole contents of the armpit, and, if there be no serious reason to the contrary, one or both pectoral muscles as well. But it is equally his duty to remove the entire mamma when operating upon an axillary tumour which appears to be cancerous, or is subsequently proved to be cancerous by histological examination, even though he can discover no tumour in the breast.

I have narrated an instance of cancer of both breasts (Mrs. D.), the disease in the second occurring more than ten years after the removal of the first. The patient still continues well, two years and four months having passed since the second operation. I have expressed the hope, if not the definite opinion, that this is an example of a

primary tumour forming in the left breast, just as happened more than ten years previously in the right one. On one other occasion only have I met with any experience at all similar, and in that case the interval between the occurrence of the disease in the two breasts was a somewhat shorter one—namely, six years.

In all other cases in which I have seen both breasts affected, the appearance of the disease in the second breast has been only an episode in its progressive and continuous advance, even when that advance has been sometimes very slow. If no other evidences of dissemination are yet apparent, they immediately become so. Although I have in several cases removed the second breast under these circumstances, the procedure has always been followed by disappointment. The infection of the remaining breast, like that of the cervical glands, indicates a degree of generalized infection which seems to me to render further operative interference unnecessary and undesirable. And one is the more inclined to pursue this policy from the knowledge that a secondary dissemination of cancer in a breast is usually slower in growth and less likely to give rise to pain, ulceration, and other troubles than a primary tumour in the same situation. I shall shortly describe the disease as it occurred in two sisters, patients of Dr. Sloan of Catrine, since both cases illustrate several important points, and amongst others the secondary infection of the remaining breast.

CASES VIII AND IX.

In November, 1894, I excised the left breast of Miss I. S., aged 55, and cleared out the armpit. In January, 1896, I operated for recurrences in the neighbourhood of the scar; and again in October, 1898, and November, 1899. On November 7th, 1900, I removed the right breast and the contents of the right axilla, on account of disease in those parts. On April 3rd, 1901, another small nodule was found near the scar on the left side and cut out. On August 10th, 1901, I have it noted that the patient called to report herself, and on careful examination I could detect no sign of disease, locally or generally. Fourteen months afterwards, however, she developed signs of disease in the lumbar spine and elsewhere, suffered much pain, lost flesh and strength quickly, and died in January, 1903, thus surviving the first operation eight years and two months.

Her sister, Miss A. S., aged 62, was operated on (left breast) in May, 1904. Within a month or six weeks this was followed by a copious crop of cutaneous and subcutaneous nodules, then by disease of the remaining breast and a metastatic tumour of the liver, with deep jaundice. She survived the operation not much more than a year.

Here were two sisters, very like each other in personal appearance, affected in the later part of their unmarried lives with cancerous tumours of very similar character, so far as physical signs and microscopic examination showed, treated by the same operation, performed by the same surgeon, but with widely differing results. In both the disease proved fatal. In one it took more than eight years to accomplish the patient's destruction; in the other life was at an end in sixteen months.

In the first of these two cases we may believe—at all events it is pleasant to believe—that operation prolonged life; in the other, as all of us must have had occasion to feel in regard to such cases, it probably shortened it.

Up to the date of my operating upon the second sister, her tumour, the existence of which had been known to her for six months or so, made comparatively slow progress. Within a few weeks of my operating on it, there was a destructive dispersion of cancer with a rapidly fatal issue. I have too often in my life had the same sort of experience, and one cannot help, on such occasions, entertaining the feeling that the mere mechanical interference with the disease has caused its immediate and wide diffusion, and precipitated its fatal issue.

This sort of experience seems to bear a close analogy to what follows every now and again after operations undertaken for surgical tuberculous disease. It is one of several resemblances which clinically may be observed between the behaviour of mammary cancer and that of various forms of surgical infective disease. The violent stimulus and injury which is inflicted, for instance, upon a tuberculous ailment, whether of bone or of the soft parts, when it is operated upon, has been found pretty often to be quickly followed by dissemination of the tubercle to the lungs or the cerebral meninges, or even by a generalized miliary tuberculosis. Verneuil¹ and others have collected and published very many illustrations of this fact; and of such experiences I, like others, have had my share. Thus, upon the only occasion on which I ever ventured to apply

the sharp spoon, and that with much gentleness, to the interior of a tuberculous kidney, after evacuating a large abscess by lumbar incision, the procedure was followed, after a few days of relief and quiet, by violent headache, high fever, vomiting, squinting, convulsion, and coma. Death occurred ten days or so after the operation from tuberculous meningitis. The patient was a nurse 35 years of age. I have seen the same mishap follow castration in a patient suffering from tuberculosis of a testicle. The disturbance of tuberculous joints, whether undertaken for diagnostic purposes or with a view to rectifying displacements, constitutes a real danger in this respect. A good many years ago I saw, on more than one occasion, with Dr. Barr Pollock, a boy of about 12 years of age, who suffered from hip-joint disease. He had been kept at rest by means of the long splint, with weight and pulley, for more than two years, and was making excellent progress. Another surgeon, who was consulted at this time, moved the joint freely under an anaesthetic for purposes of better diagnosis, giving his opinion afterwards against any operative interference, and recommending a continuance of the treatment hitherto used. Within a week the boy developed the signs of a meningitis, of which he died in less than a month. I once had a girl of 18 or 19 years of age under my care with a caries of part of the tarsus which had existed without dissemination or serious effect on the general health for eleven years. I scraped it with the sharp spoon, and this was soon followed by tuberculosis of the sternum and the apex of one lung.

I might easily adduce other examples of this form of surgical calamity, but I mention these with a view of attracting your attention to the resemblance they bear to those distressing and quick explosions of cancerous recurrence which now and then follow the removal of the mamma. The clinical fact is enough to make us, as far as possible, avoid all undue pressure upon and squeezing of the tumour, whether during diagnostic manipulation or during the operation for its removal.

The other sister whose case I have referred to lived for more than eight years after operation, although she suffered throughout from the disease. The reason of this clearly was that, whereas in the rapidly fatal case an early metastasis to the liver occurred and precipitated death, in her sister the disease remained external throughout.

Here again we have a striking resemblance to the behaviour of certain cases of infective diseases. It would seem *a priori* almost incredible that a young child should develop in a few months dozens of tuberculous lesions on the surface of the body, thus proving the free circulation and movement of the tubercle bacillus, and yet escape all infection of peritoneum, meninges, pleura, lungs, kidneys, or other internal organs to which childhood is so very prone. And yet such an occurrence is almost a matter of everyday experience.

I lately treated, along with my friend Dr. Ferguson of Paisley, a child, whose case is a striking, but by no means rare, example of that to which I refer. Its only unusual feature, perhaps, is that the patient was the child of wealthy parents, such cases being most often seen amongst the poor. She was born in May, 1900, and was a singularly plump and beautiful baby. In February, 1901, a livid nodule formed in the skin of the left cheek. This ultimately softened and was scraped, the resulting sore being about the size of a shilling. In May, 1901, two similar nodules appeared in the same cheek, and one in the right cheek. When she was 15 months old the edge of the malar bone near the outer corner of the left orbit became infected and gave rise to an abscess. Two months later a similar lesion declared itself on a similar spot on the other side of the face. Small sequestra ultimately separated from these situations. A month after this an abscess connected with the lower maxilla declared itself and was opened. Ultimately a considerable sequestrum separated. By June, 1902, she had developed fourteen other lesions—in metacarpus, proximal phalanges of the fingers, metatarsus, proximal phalanx of one great toe, and also in cervical glands. Many small subcutaneous cold abscesses formed after December, 1901, and one of considerable size showed itself in the left loin. This was treated, with most satisfactory results, by emptying it and injecting iodoform emulsion in glycerine. Most of the lesions of bone and the soft parts were treated with the sharp spoon, while sequestra were removed when loose, and one or two cervical glands were excised, in operations performed from time to time. The last of these was performed in June, 1903. In the beginning of 1904 every lesion was healed. During her long illness the child emaciated and looked ill, being fretful and peevish. The lesions in the external parts of the body numbered twenty-eight

in all. Never once, however, did she exhibit the slightest sign of disease in abdomen, chest, or head. Now she is a vigorous, healthy-looking child, nearly nine years of age, full of life and spirit, and not so much disfigured as might have been expected.

I can well remember cases of pyaemia in the Glasgow Royal Infirmary, in the dark days of surgery more than forty years ago, in which multiple abscesses, in the same way, remained confined entirely to the external parts, and in such cases—and they were the happy few—recovery often occurred. The surgeons of that day were not unfamiliar with them, and they were referred to as cases of "external pyaemia." In his *Illustrations of Clinical Surgery*, vol. 1, p. 229, Sir Jonathan Hutchinson, referring to this matter, remarks:

It may be that the term "external pyaemia" is founded only on a few coincidences, but there is no doubt that amongst surgeons the opinion prevails that when with pyaemic symptoms abscesses develop in the cellular tissue, the case has about it an additional amount of hope.

Of course no case of disseminated mammary cancer, even when the lesions continue entirely external, can be expected to undergo cure, as may often happen with tubercle and pyaemia; but some of them live for a long period of years—some have been recorded who survived for twenty years—and in the case of others even disappearance and cure of individual cancerous lesions, quite apart from any treatment, have been observed. Of this fact of long survival, when for some inexplicable reason dissemination does not reach internal organs, I could adduce a good many examples. I shall mention only two.

CASE X.

One pursued its course from first to last uninterrupted by any operation. This was the case of a lady whom I saw many years ago with the late Dr. Paterson of Bridge of Allan. Several of her near relatives had been operated on for the same disease, and in all of them somewhat early recurrence and death had taken place. She therefore stoutly refused the suggestion of operation. I saw her again about thirteen years afterwards in her house in Glasgow, with her medical attendant, on account of a very severe haemorrhage from a spot in a large cancerous ulcer, which occupied the situation of the breast. All over that side of the chest there were scattered nodules of cancer. The upper limb on the affected side was greatly distended with oedema, and masses of cancer were obvious in the axilla and above the clavicle. Yet, though wasted and cachectic in appearance, this lady had not been confined to bed, did not suffer great pain, and in many ways had continued to enjoy her life. She did not die for some considerable time after my visit, being well over 70 years of age at the time of her death. She never resorted to the habitual use of any form of opiate.

The following case illustrates quite as strikingly the external character of the disease and the consequent comparatively long duration of life.

CASE XI.

In December, 1901, I was consulted regarding the case of Miss D., a patient of Dr. Arthur Mehan. She was then about 40 years of age, and, I was informed, had been operated on in 1898, two and a half years previously, on account of carcinoma of the breast; and now some nodules of the disease had appeared in the scar. These I excised, and repeated the procedure six months afterwards on account of a fresh crop of recurrent nodules. Before long others began to appear in and around the scar, while there were hard cancerous glands at the root of the neck and unmistakable signs of the disease in a dorsal vertebra, with slight angular curvature and pretty severe pain encircling the chest. Nevertheless, she continued going about daily till about a year ago, and appeared to enjoy life in spite of her disease, which continued to progress. By aid of the constant use of morphine, she accomplished the daily necessary household shopping, made calls on her friends, occasionally went out to dinner, and often attended concerts. At Christmas, 1907, she was present at a tea party given one afternoon, in my female ward in the Western Infirmary, by some ladies, to the patients, and evidently enjoyed the novel experience; but for a year past she had been much weaker. Lately, when she was getting out of bed one day, one femur broke. Her weakness then quickly increased, and she sank and died, having survived the amputation of her breast about eleven years. At no time was there any indication of disease in thorax or abdomen.

Mr. Herbert Snow has remarked that "the 'favourable conditions' for long life in cancerous patients mean the induction of the most passive and vegetable existence that it is possible to secure, the aim being to procure and to sustain in such the utmost tranquillity of body and mind," and advises the free use of morphine. It is worthy of remark that this lady took morphine very freely throughout her long illness, using latterly as much as $1\frac{1}{2}$ grains of that drug by hypodermic injection every twenty-four hours.

The late recrudescence of the disease in a patient who has, for many years, survived an operation for cancer of the breast, and in regard to whom our anxiety has long ago been lulled to rest, instances of which I have already cited, may be regarded as illustrating another analogy or resemblance between the behaviour of certain cases of cancerous and of some other infective diseases. Paget drew attention, in a well-known essay, to the frequency with which lesions of tuberculous disease and of osteomyelitis, long ago healed, are apt to relapse and once more waken into activity. This essay was entitled *Residual Abscess*, and in it he wrote of inflammations and abscesses occurring in connexion with the residues of former attacks of disease. "Under the name 'residual abscess' I would include," he wrote, "all abscesses found in and about the residues of former inflammations. Most of them are found where pus, produced long previously, has been wholly or in part retained and become dry or in some form 'obsolete.' But some of them, it is probable, are formed in the thickenings, adhesions, or other lowly-formed products of inflammation long past." This essay was written in pre-bacteriological days; and, in the light of more recent knowledge, the clinical fact must be explained rather by the reawakened activity of latent germs in the part than by any influence of the residual products of the former inflammations which, by their action, those germs originally furnished. Every surgeon has had cause to observe cases of relapse in after-life both of tuberculosis and osteomyelitis, the primary manifestations of which may have taken place in early infancy.

I conversed only a few weeks ago with a gentleman now in his 69th year, who suffered from hip-joint disease when 5 years of age. He was ill and confined to bed for many years, and all his boyhood was passed in great pain. His hip became dislocated and a sinus continued to discharge till he was about 15 years of age. From that time, however, he continued fairly well, attending school and afterwards entering upon a business life. At 31 years of age he was laid up for a considerable time, an abscess forming and bursting at the old cicatrix. In six months it had healed. He remained in good health and actively engaged in business until he was 52, when he came under my care with a large abscess of the hip, which did not permanently close for more than three years. Once more, since then, he has enjoyed excellent health.

The same tendency to recrudescence is observed in staphylococcal infection of bone years after what seems a satisfactory and absolute cure.

A well-known citizen of Glasgow recently died, being over 60 years of age, who passed through a prolonged and dangerous illness under my care when he was about 30. When 7 years of age he suffered from osteomyelitis, with extensive necrosis of one femur, but, after a long illness, recovered. When I attended him he had great pain, swelling, and tenderness in the same part, with very high fever and delirium. Ultimately I evacuated an abscess which contained nearly a pint of pus. After recovery he once more led a strenuous life, building up an important and very extensive business. In addition, he was a member of Parliament for several years and the author of more than one literary venture. These facts show that he was able to lead an active life. Nevertheless, his old disease again laid him aside on two different occasions for a week or two with recurrent inflammations, without, however, any abscess formation. It had no share in bringing about his death.

Perhaps no more striking example of a recrudescence of latent organisms can be cited than that which is occasionally observed when a periostitis or osteomyelitis has occurred, say of a tibia, during convalescence from an attack of typhoid fever, and has once more subsided. Several years, it may be, after such a bone ailment (cases have been recorded where ten years have elapsed) inflammation may once more occur, and may end in abscess formation. On cultivation the pus is found to yield a pure culture of the typhoid bacillus. I have met with this experience both in connexion with bone and with the gall bladder.

One cannot help recognizing in such occurrences at least a superficial resemblance to those cases of late recurrence of cancer where residual fragments—or may it be resting germs?—of cancer wake up to activity long after apparently assured cure, bring about fresh proliferation and dissemination, and so accomplish the postponed death of the patient.

Our most favourable results, then, if my experience has not been exceptional, are not to be regarded as due necessarily and always to the form and extent of our operation or to the date of our interference relatively to the size of the tumour. They seem due rather to the

essential character of the individual tumour and the degree of invasion of the lymphatic system of the part in each individual case. If the upper axilla be involved as well as the lower, the prognosis is the more doubtful; if there be obvious infection of the skin, especially in the form of detached separate nodules near the seat of the disease, the prospect of long immunity from recurrence is very slight, however large an area of skin be sacrificed, while if the disease is apparent in glands above the clavicle, I always now decline to operate. Still the extent of the operation is, undoubtedly, a certain factor in our results. I have mentioned the fact that long-continued good health and apparently permanent cure sometimes, in former days, followed removal of the breast alone; but the much more frequent experience of such encouraging results after the more extensive procedure of also clearing out the armpit has been very marked indeed. While preparing this paper I have either personally seen, or communicated with the medical attendants of, ten patients who remain quite well after operations performed seven years ago and upwards for mammary cancer, verified after removal by microscopic examination. The list only includes one hospital patient, as such patients, for the most part, quickly disappear from one's view, and I have made no search at all amongst former patients, whether private or hospital. These ten to whom I refer chance to have remained within the area of my own knowledge and observation. The periods of time which have elapsed since operation in these cases are respectively thirteen years, twelve years and four months, eleven years and eight months, ten years and eight months, ten years and six months, nine years and one month, nine years, seven years and ten months, seven years and three months, and seven years. In all of these cases the contents of the axilla were removed, but in none were the pectoral muscles interfered with. I believe it would, at any time, have been impossible for a surgeon of thirty or forty years ago, who removed the mammary gland alone, to have made a statement similar to this. Nowadays there are large numbers of surgeons all over the world whose experience of results is of exactly the same character; and this, no one will dispute, is due to the more extended nature of the operation. Whether or not the routine practice of removing the pectoral muscles will mark a corresponding advance is doubtful; but I think it should be followed, in the absence of anything to contraindicate it, since we must do everything we can to be in advance with our operation of any existing dissemination of the disease; and, in any case, the removal of these muscles makes the clearing out of the axilla much more easy and satisfactory, while their absence is hardly at all disabling as regards the future usefulness of a woman's arm.

REFERENCES.

¹ *Études sur la Tuberculose*, Paris, 1887. ² *St. Bartholomew's Hospital Reports*, 1869, vol. v.

A Lecture

ON

THE NATURAL CURE OF CANCER.*

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ON two previous occasions, when I had the honour of occupying this chair, I presented a view of the mode of dissemination of cancer which I had worked out in the laboratories of the Middlesex Hospital. Under the name of the permeation theory, this view met with wide acceptance. In America it has recently found distinguished advocates in Professor W. S. Halsted, Dr. W. B. Coley, and Professor Rodman, and it has been confirmed in the laboratories where it originated by the work of Dr. Victor Bonney and that of Mr. Cecil Rowntree.

My reasons for mentioning these facts are two in number: First, that, although the permeation theory has met with wide intellectual acceptance, its intensely practical bearing on the surgery of every variety of cancer has

not yet been generally realized. In the second place, much of what I have to say to-day is a corollary of the permeation view of dissemination, and it is necessary to show that I have warrant for assuming its truth.†

Since the severance of my official connexion with the Cancer Research Laboratories of the Middlesex Hospital upon my appointment to the surgical staff of the hospital in 1906, my researches have been extended to stomach cancer, with the aid of a grant from the Imperial Cancer Research Fund. On a future occasion I hope to have the privilege of bringing forward my results in regard to gastric carcinoma.

In the literature of carcinoma there are embedded a number of scattered observations, usually referring to single cases, which show that under certain circumstances the disappearance of cancerous masses of macroscopic size may occur spontaneously. In a few cases all clinical evidence of the disease has in this way disappeared, and a natural cure seems to have been brought about.

Occurring in what is usually regarded as the type of a steadily progressive malady pursuing its undeviating course to a fatal event, these facts have appeared strange and anomalous to most of the authors who have recorded them. Their possible significance in respect to the cure of cancer, a significance which it would be difficult to overestimate, has been referred to by Mr. Pearce Gould, who, in a lecture on "Cases Illustrating Repair in Cancer of the Breast,"¹ pointed out that "we are justified in speaking of repair in cancer, even in its advanced stages," a conclusion which "justifies—nay, compels—a belief in the possibility of the cure of cancer, and gives us an indication of the direction in which a cure is to be sought."

In this lecture I propose to consider, as fully as time and a difficult and elusive subject will allow, the facts which bear on the natural cure of cancer.

I hope to show that, as I have stated elsewhere, "the progress of a cancer is normally accompanied by retrogressive or curative processes"²; that the recorded cases of natural repair in cancer, far from being anomalous and exceptional, merely illustrate more strikingly than usual the natural laws which govern every case of the disease. The order of Nature admits of no real anomalies, and is often best brought to light by the close study of apparent exceptions.

AN UNRECOGNIZED LAW OF CANCEROUS GROWTH.

The unrecognized law of cancerous growth which I wish to establish may be stated as follows:

Every aggregation of carcinoma cells has a definite life-cycle, and, after increasing in size for a varying period and at a varying rate, tends spontaneously to undergo degenerative and fibrotic changes. These changes extend from the centre of the mass centrifugally to its periphery, lead to its shrinkage, and terminate in the replacement of the aggregation of cancer cells by a fibrous scar.

In other words, the natural history of a cancer is one of centrifugal growth followed by centrifugal death. It is obvious that the postulate thus stated cannot be completely proved, if only because at the time death occurs the life-cycle of many—and in some cases of all—of the deposits will be incomplete. The most I can hope to do is to produce a certain amount of positive evidence for my proposition, to meet certain possible objections, and, above all, to show that its acceptance drills into order a ragged regiment of apparently anomalous facts, provides a trenchant weapon of criticism for deciding the value of cancer cures, and offers an explanation of the vogue which almost any cancer remedy may for a brief space attain.

To avoid misconception it will be well at the outset to state that the natural cure in cancer is a local and not a constitutional process, and that as a rule it closely follows up, without overtaking, the centrifugal spread of permeation, and so fails to arrest the march of the disease. It is certain that in some cases its vigour is sufficient to strangle the growth in an early stage, or to reduce it to impotence for a long term of years, but as a rule the natural processes of cure go on contemporaneously with

† The permeation theory is beginning to gain adherents on the Continent. At the Congress of the International Society of Surgery, held at Brussels in September, 1908, Professor A. Depage, in opening the discussion on breast cancer, said: "Les recherches récentes de Handley et sa théorie de perméation nous ouvrent en ce moment des horizons nouveaux."

* Delivered before the Royal College of Surgeons of England.