

## Advances in the Cure of Cancer

BY

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Cancer is so common a disease and is met with in every country so that to-day with efficient "follow-up" we are nearer than ever before in knowing the curability rate. We must remember, however, that some forms of cancer are on the increase while others are declining.

Cancer of the lung is probably the commonest form of cancer to-day in England, and yet it was only in 1923 that I published some cases in the *British Journal of Surgery* and I stated that it is an uncommon form of cancer and very rare in women. But to-day, just over 30 years later, this form of cancer is only too common in both sexes. Why this change in so short a time? There are probably many factors on the aetiology of cancer of the lung, and cigarette smoking is one of these. There are many others: hydrocarbons from the exhausts of motor cars, the dense "smog" that occurs over our great cities in the winter months, the tarred roads and the constant and indiscriminate use of the many and varied antibiotics. These all play their part in the production of cancer of the lung. To-day it is only too common to find metastases from cancer of the lung when the primary growth gives rise to no symptoms whatever. During the last three months I have operated upon isolated tumours in the abdomen and on the limbs, and the first indication that a lung cancer was present was the histological report of these excised tumours, which were all secondary metastases to a silent neoplasm of the lung. This being so, it means that blood-borne metastases occur early in cases of cancer of the lung. Quite a large number of lung cancers occur at the periphery of the lung and metastasize in the bronchus or bronchial glands. This is revealed by cutting large sections of the whole lung after pneumectomy. At the present time the Imperial Cancer Research Fund at the Royal College of Surgeons of England are investigating the problem of cancer of the lung, and no doubt some definite information will be forthcoming in the not too distant future. Probably the examination of the sputum in early cases when cancer cells are found will become

standardised soon, and this in itself will be a great advance and will allow early pneumectomy to be carried out. There is no doubt whatever that good results are obtained with pneumectomy in early cases, but up to the present more late cases than early are coming for operation. An elderly man came up to the outpatients last month with firm glands in his axilla. A diagnosis of Hodgkin's Disease was made and a gland was removed for section. Histological examination revealed a secondary carcinoma of the lung; the primary growth was not apparent clinically or radiographically.

Radiotherapy is not an ideal form of treatment for cancer of the lung, as it produces marked fibrosis and reduces the vital capacity of the lung. It can be used in inoperable cases, but it may cause earlier osseous secondary deposits.

In contrast to cancer of the lung, which is on the increase, cancer of the gall-bladder and cancer of the stomach are on the decrease. This is due to the fact that carcinoma of the gall-bladder is unknown except in the presence of gall-stones or in gall-bladders from which stones have been removed. To-day the universal treatment of gall-stones is the removal of the gall-bladder, and this fact alone is the cause of the great reduction in cancer of the gall-bladder.

Again with regard to cancer of the stomach, the routine treatment for peptic ulcer to-day is some form of gastrectomy. All forms of gastrectomy remove the pylorus, and it is at this site that the majority of cancers occur. Nowadays very few gastroenterostomies are carried out for peptic ulceration. With careful examination, both clinical and radiological, most cases of early carcinoma of the stomach will be found and with surgical excision a greater percentage of cures should be forthcoming.

Cancer of the breast and cancer of the prostate show an increase in the last decade, and this may be influenced by the fact that people are living longer and therefore a greater percentage pass through the "cancer period."

When it is considered that cancer of the breast and prostate are hormone-dependent in a considerable proportion of patients, it might be thought that a greater percentage of cures might be forthcoming, but this is not so, although relief of symptoms and prolongation of life do occur. Much research has been carried out in recent years on this important subject, but much more requires to be done.

It must be remembered that oestrogen-induced tumours in animals can be obtained in the breast, uterus, kidney and testis and that these induced tumours are formed only if the supply of oestrogen is continuous.

For women before the menopause there can be no doubt that oophorectomy does retard cancer of the breast; and although this was pointed out by Beatson of Glasgow in 1896, yet it is only during the last decade that the beneficial effects of oophorectomy have been once more obtained. Huggins in 1954 was not satisfied with oophorectomy alone and tried bilateral adrenalectomy in advanced cases of cancer of the breast. Cade also tried this form of treatment and came to the conclusion that bilateral adrenalectomy controlled widely disseminated breast and prostatic cancer in about 60 per cent. of patients.

Perrault and Lufand Olivecrona have studied the effects of hypophysectomy in cases of advanced cancer of the breast and prostate and have come to the conclusion that this operative procedure is more efficient than adrenalectomy, but it is most important that complete removal of the pituitary is obtained. If even the smallest portion of the pituitary is left behind, the mammary or prostatic cancer will be activated.

It may be asked where is the hormone treatment of cancer leading us. It is difficult to forecast, but at the present moment the most urgent need is for more and more biochemists to obtain more accurate laboratory methods to estimate various hormones so that the hormonal treatment of cancer is more precise and less empirical.

The surgical treatment of cancer of the breast has become stabilised to-day and a radical excision gives the best results in early cases. It is now recognised that early cases of cancer of the breast occurring in the inner quadrants must always be looked upon as stage II cases, that is, there is glandular involvement of the internal mammary lymphatics. Therefore in all early cases of cancer of the breast developing in the inner quadrants, radical excision of the breast is required and radiotherapy to the chest is required later.

Our knowledge of the lymphatic drainage of the breast has increased during the last forty years. As a student I often watched the late Sir Watson Cheyne perform a radical excision of the breast, divide the clavicle and remove the supraclavicular glands. These patients rarely survived six months, but died of general

metastases and recurrence in the supraclavicular regions. It was thought and taught at that time (1909) that the lymphatics of the breast passed under and over the clavicle to the supraclavicular glands. It was also taught that the lymphatics of the axilla passed upwards into the supraclavicular glands. These ideas of lymphatic spread have been greatly modified during the last thirty years, as the pathology of mammary cancer has been placed on a more sound foundation.

I believe, but not every surgeon will agree with me, that there is no lymphatic connection between the breast and the supraclavicular gland except via the upper intercostal spaces and the internal mammary glands. In my opinion there is no connection between the axilla and the supraclavicular glands. On this belief hangs the modern conception of radical mastectomy. The conservation of the clavicular head of the pectoralis major muscle implies that no lymphatic vessels pass from the breast to the supraclavicular glands in front of or behind the clavicle.

Involvement of the supraclavicular glands therefore means that intrathoracic extension of the disease has taken place and the condition is therefore inoperable. Although the lymphatics of the breast are numerous, there are very definite pathways which determine the spread of the disease. The lymphatics from the upper and outer quadrant drain into the axillary glands. Those from the lower and outer quadrant drain for the most part into the axilla, but a few may drain to the lymphatics of the abdominal wall to the umbilicus and so via the ligamentum teres to the liver. The lymphatics of the inner quadrants of the breast drain via the intercostal spaces into the internal mammary glands and the anterior mediastinum and so to the supraclavicular glands.

Some lymphatics may pass across the middle line to the opposite breast; a few may pass to the para-mammary glands and to the abdominal lymphatics.

It is essential that early diagnosis should be made if better results are to be obtained in the treatment of carcinoma of the breast. There are several factors which have in the past prevented early diagnosis and these should be entirely eliminated to-day. The patient who discovers a lump in her breast often decides to tell no one, as it might be cancer and she might die as some of her friends or relatives have done. This fear of cancer is very real and must be

tackled by the profession on proper lines. The laity must be convinced that cancer of the breast can be cured in the early stages of the disease. I have found that the average time taken by my patients before they report the presence of a lump in the breast is six months, while in some cases it is double that time. Another factor is the treatment of cancer of the breast by quacks and herbalists and the like. This is a free country and patients may seek advice from anyone, but it is a pity that some sort of propaganda should not be used to reveal the real danger to which the public at large are subjected.

Early diagnosis by the practitioner has in the past been hampered by the fact that nearly every textbook on surgery reveals the late stages of the disease as diagnostic factors of importance. It must be acknowledged that there is only one early sign of carcinoma of the breast, and that is the presence of a lump. This lump is in the substance of the breast, is usually hard and can often be felt by the flat of the hand. Cancer is the commonest cause of a lump in the breast, and this must not be forgotten. The lump is closely united to, if not absolutely incorporated with, the breast substance, and on careful digital examination its margin is quite indefinite. In the early stages it is entirely distinct from the skin, which moves freely over its surface; but as growth proceeds the stroma contracts, and by dragging on the suspensory ligaments of Cooper passing from the glandular substance to the skin, the latter structure becomes more or less fixed and hence, on attempting to move it upon the tumour, an appearance of dimpling results.

In investigating any case of a lump in the breast the practitioner must never arrive at a hasty conclusion, but give an opinion as to its nature only after careful and detailed examination. Thus the age and previous history of the patient and the family history should be considered. Simple tumours generally arise at an earlier date than the malignant tumours, whilst sarcomas usually affect younger individuals than do carcinomas. There can be little doubt, moreover, as to the occasional tendency of tumours to run in families. The length of time for which the swelling has been observed and whether or not it varies in size at the menstrual periods should be ascertained. The general appearance of the patient should be noted, and also the fact whether local or neuralgic pain is experienced. It is not unusual for pain to be referred to that part of the shoulder supplied

by the posterior division of the second intercostal nerve, the anterior branch of which goes to the breast.

A careful inspection of the organ should be made with the patient sitting and lying down, comparing it with the opposite breast, so that any signs of asymmetry may be noted. Dimpling of the skin, projection of the tumour or of the whole gland, and the situation and condition of the nipple are the chief points to which the practitioner's attention should be directed. Examination with the flat of the hand, accompanied by gentle pressure of the fingertips, must then be undertaken; it is not enough to pick up the breast substance between the fingers, as thereby false impressions are obtained.

The relation of the tumour to the gland, its shape, its consistency, whether fluctuating or not, and its mobility on superficial, deep and surrounding parts should be investigated. To this end the breast must also be examined with the patient's hand pressed to the hip, so as to put the fibres of the pectoralis major muscle into action; transverse movement of the organ across the fibres is always possible, unless the growth is fixed to the thoracic wall; movement in the direction of the fibres is at once limited if the tumour has invaded the muscle or even if the overlying fascia is seriously involved. Finally, the lymphatic glands in the axilla, the supra-clavicular glands and the opposite breast and axilla must be carefully examined. After such a detailed examination, if the practitioner is still in doubt as to the nature of a tumour of the breast, then local excision of the whole lump and not part of it should be undertaken and a histological examination of the tissue removed should be made. If the condition is benign, then the patient will be completely satisfied and relieved; if, on the other hand, the condition is malignant, adequate treatment can be forthcoming.

It is important to classify the clinical manifestations of carcinoma of the breast before any decision is made as to the form of treatment. The clinical classification can be divided into the following stages:—

*Stage I.*—Tumour of the breast only. This demands radical removal of the breast only. If the patient is still menstruating, bilateral oophorectomy should be carried out at the same time.

*Stage II.*—Tumour of the breast and skin changes or involvement of axillary glands or

both. Radical amputation and oophorectomy if patient is premenopausal, followed by a course of deep X-ray therapy.

*Stage III.*—Tumour of the breast and involvement of supraclavicular glands or glands in opposite axilla or fixation of the breast to the pectoral fascia, or both. This type of case demands bilateral oophorectomy if premenopausal and deep X-ray therapy. If the breast is fungating, a local removal is necessary to make the patient more comfortable.

*Stage IV.*—Skeletal and visceral metastases. Bilateral oophorectomy if patient is premenopausal, followed by adrenalectomy or hypophysectomy.

Cancer of the thyroid is decreasing and this is due to the fact that the majority of cases of thyroid cancer occur in nodular goitres. To-day the profession realise this and the majority of cases of nodular goitres are operated upon and the nodules removed.

When cancer has occurred, thyroidectomy should be performed. Post-operative X-ray therapy gives added protection.

Radioactive iodine has been used in the treatment of cancer of the thyroid, but is of little use as the growth is non-toxic, and so the gland does not take up the radioactive iodine in sufficient quantity to be of any therapeutic value.

Cancer of the oesophagus should whenever possible be treated by surgical excision through a thoraco-abdominal approach and incising the diaphragm. The stomach is then brought into the thorax and anastomosed to the upper end of the oesophagus.

Women develop carcinoma of the oesophagus in the postcricoid region and this can be excised quite easily by Trotter's method. Men, however, suffer from cancer of the oesophagus at a situa-

tion where the left bronchus crosses it, about twelve inches from the teeth, and excision is much more difficult, but quite a large percentage of cures is now obtained thanks to modern anaesthesia, antibiotic drugs and blood transfusion. All carcinomas of the oesophagus are squamous celled and therefore radiosensitive, but even with modern X-ray therapy lung fibrosis commonly follows this treatment and leaves the patient with a poor vital capacity, and the results are not so good as with surgical excision.

Cancer of the small bowel is a rarity and causes early obstruction, and surgical excision gives good results in most cases.

The results of treatment of cancer of the colon and rectum are improving each year. Bigger resections can be carried out with end to end union. The antibiotics have helped the surgeon enormously in sterilising the intestinal flora prior to operation.

What of the future? Are we any nearer to a cure of all forms of cancer? I would think the answer is yes. There never has been an age when more cancer research has been carried on. The time will come, in my opinion, when a chemical agent is discovered which is lethal to the cancer cell and not to the rest of the body. When this time arrives all the modern extensive excisions for cancer will be quite unnecessary. Time alone will tell when this happy solution to the cancer problem will be forthcoming.

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