REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE EARLY DIAGNOSIS OF BRONCHIAL CARCINOMA

BY

R. C. BROCK, M.S., F.R.C.S.

Thoracic Surgeon to Guy's Hospital; Surgeon to the Brompton Hospital

A generation ago bronchial carcinoma was a rare disease; this is far from the case to-day. All practitioners have been brought up to a knowledge of carcinoma of the stomach and of the colon, and have been taught to think of and look for these diseases. The incidence of bronchial carcinoma in men is to-day very little different from that of carcinoma of the stomach or colon, and it is therefore evident that it is a disease that demands equal attention. Furthermore, a bare 16 years ago bronchial carcinoma was virtually incurable; its diagnosis was synonymous with a death-warrant. Since Graham demonstrated in 1933 that pneumonectomy could be performed successfully for its treatment we have had this means at our disposal. Graham's original patient is still alive and working, and a sufficient number of other patients have survived for 5 to 10 years or longer to prove beyond doubt that the condition is now definitely curable in a proportion of cases.

Improved Outlook

In the early years of surgical treatment the operability rate was low and the mortality of operation relatively high. The operability rate is now much higher and the mortality rate from operation much lower. For instance, analysis of my own figures from 1942 up to the end of 1948 reveals the following encouraging improvement.

Cases of Bronchial Carcinoma, 1941-8

Total seen	800
Thoracotomy	172
Inoperable at thoracotomy	59
Operable	106

Average operability = 13.25%

Last Four Years; 449 Cases, 83 Operable = 19%

1945	15%
1946	13%
1947	21%
1948	23%

There have been 19 deaths in 136 operations for removal of growth. In the last 100 cases there have been 9 deaths, and only 2 operative deaths in the last 40 cases, both of which were bad risk cases.

The improved operability rate is due in some measure to improved technique. Increased familiarity with the problem and increased confidence enable one to operate on cases that earlier would have been thought entirely unsuitable. Apart from this, there is no doubt that the improved operability rate is also due to patients being sent earlier for diagnosis and for treatment. The surgeon can cure many cases of bronchial carcinoma, but only if the patient is referred to him in a favourable phase of the disease. The main task in this matter lies with the general practitioner and the consultant physician, who must inevitably see the patients first, for no patient will direct his own steps to the thoracic surgeon.

Practitioners are becoming increasingly "carcinoma-of-the-lung-minded" and are referring many more patients for advice and treatment at an early phase of the disease. This is a healthy sign, and deserves the proper recognition due to it. In fact, in the larger chest centres the steady stream of cases of bronchial carcinoma is tending to be embarrassingly large in face of the great difficulty in pro-

viding beds for cases of all sorts that has resulted from the steady, and as yet apparently unchecked, deterioration of the bed situation.

Principles in Diagnosis

The most important factor in making a diagnosis of a disease is to think of the possibility of its existence. It is a sound general rule to state that any departure from normality in the functions of any viscus or major structure in the body in a patient of cancer age should make one think of the possibility of malignant disease. If this is borne in mind in the case of the lungs we should have far fewer examples of gross delay or complete oversight in the diagnosis of bronchial carcinoma.

In some early cases it is extremely difficult to diagnose the condition, even with good radiology. In a number of cases no one but an expert should feel that he has been at fault in not making an earlier diagnosis. Of much more practical importance is the large number of patients still seen who have been under observation with empirical treatment for several months, and who are found to be inoperable when they eventually attend for special examination. In a great proportion of these cases the diagnosis would have been made much earlier if the significance of certain simple features had been recognized. It is therefore of chief importance for us to consider these aspects rather than the more complex and difficult presentations that may deceive or perplex even the expert.

It should be remembered that the average duration of life from the time the patient first presents himself for treatment is somewhere between six and nine months. It follows that it is useless to spend three to four months or more in making a diagnosis and then to expect the disease to be curable in any but a very small proportion of cases.

One of the gravest errors, which all teachers should concentrate on stamping out, is the impression, still far too prevalent, that a diagnostic feature is that the patient should look as if he had got cancer, or at any rate some grave disease. We no longer expect to see a typical "consumptive" before we think of diagnosing pulmonary tuberculosis. We should know that if at a glance the patient looks likely to have malignant disease then he is almost certainly past all hope.

We are then looking at the picture of approaching death, not of malignant disease (Fig. 1). This applies to cancer any-

FIG. 1.—The general well-being of the patient with an early growth is contrasted with the cachexia in advanced disease.

where, but demands special emphasis in connexion with bronchial carcinoma. One still hears statements that the clinical features or radiological appearances are consistent with carcinoma but the patient does not "look as if he has got a growth." Such an attitude to-day is stupid, ignorant, and almost contemptible. By all means use the appearance, of malignant cachexia as a diagnostic point if, unhappily, it is there—but do not wait for it to appear before thinking of cancer.

Symptoms

Unfortunately, carcinoma of the lung, like that of other viscera, is at times so insidious in its onset or so swift in its course that the earliest clinical manifestation may be that of a mortal extension or complication. The first symptom may, for instance, be due to a cerebral metastasis. For these cases no one can upbraid himself.

Bronchial carcinoma is commonest between 40 and 60, but may appear at any age. It must be thought of in the thirties, and is by no means infrequent in the twenties. Unfortunately in these younger people it is rarely amenable to successful treatment. It is four times as common in men as in women.

Cough.—By far the most important symptom is cough. The onset of cough in a middle-aged patient hitherto free from the symptom is always most suggestive. Very often the cough is dry and rather insignificant, and is ascribed to smoking or passed over as of little or no importance. Even when a symptom such as blood-spitting causes the patient to seek advice he may still make light of any pre-existing cough. I have found that direct inquiry from the wife usually reveals a more reliable story. In a fair proportion of cases, on the other hand, one finds that the patient says he has had a cough for many years and that he has noticed no change in it, though some will remark upon a recent change in its character. Here again the wife may prove to be the better informant. A not uncommon feature is that the usual winter cough that the patient may have suffered has not cleared up in the summer and has been associated with new symptoms.

Haemoptysis.—The most significant symptom and the one which so often sends the patient to his doctor is blood in the sputum. This is a most important feature, and the patient should always be carefully cross-examined about it. The blood is often so small in amount as to disarm suspicion in an easy mind, and its very persistence may allay anxiety, especially if the patient is reassured by his doctor. Patients may be so unreliable in their evidence—and this can be such valuable evidence—that in every suspicious case the sputum should be inspected by the doctor. Pink discoloration is often found when bleeding has been denied. Continuous daily, or almost daily, blood-staining of the sputum extending over weeks or months is, from the practical standpoint, diagnostic.

Pain.—Pain is not a common feature and does not often cause the patient to seek advice, unless it be from bony metastases or from an acute pleurisy. More often there is only a dull ache or a sensation of discomfort.

Symptoms of Secondary Infection.—The pain of acute pleurisy naturally leads to consideration of the next most common manifestation of the disease—namely, those features due to secondary infection behind the growth. In their milder forms they are diagnosed as "bronchitis," "pleurisy," or "influenza," and in their more severe forms as "pneumonia" or "fluid." An empyema or a lung abscess may also occur. All or any of these may be legitimate diagnoses; their sinister significance lies in their imperfect resolution or their recurrence.

One of the commonest complaints is that of the man who has never felt the same since his attack of "flu" last winter, whose cough has persisted or whose symptoms have recurred with increased severity after temporary improvement. "Unresolved pneumonia," often a radiologically inspired diagnosis, must always lead to the gravest suspicion of cancer, and every effort must be made to exclude it.

In the past the classical diagnoses of "pleurisy" and "pneumonia" were so honourable as to be accepted as complete in themselves. In many cases these illnesses are symptoms rather than primary diseases, and we should not rest until we have excluded an underlying major causal lesion. Every patient who has had "pneumonia" should certainly be examined radiologically in convalescence.

Even the occurrence of an empyema after an attack of pneumonia should not allay suspicion, but a routine consideration and exclusion of growth should be made.

"Lung abscess" is often another trap. It should be remembered that after the age of 45 there is a one-in-three chance of a lung abscess being due to a growth of the lung.

Apart from these inflammatory manifestations, bronchial carcinoma may present, especially in the elderly, as an insidious disease causing only vague deterioration of health with lassitude, loss of weight, and anaemia. Indeed, the quiet deterioration may lead to suspicion of a concealed carcinoma of the stomach and a shadow in the lungs may be revealed incidentally in the course of a screen examination for this condition.

Clinical Examination

Unreliability of Physical Signs.—Physical examination of the chest may reveal some obvious abnormality, but it will often show nothing at all, or nothing that is diagnostic. It cannot be too strongly emphasized that the placing of faith in percussion and auscultation is absolutely wrong: a negative examination means nothing. Only by good radiology can an early diagnosis be made in most cases.

There are only two physical signs that point strongly to growth. One of these is absolute dullness not due to fluid and the other is bronchial stridor. Both of these are more likely to be noted in advanced or hopeless cases.

Radiology.—Radiology is our chief means of diagnosis, but it must be good radiology. A technically poor film may cause a growth to be overlooked, and there are still far too many poor radiographic apparatuses about to-day. Moreover, although at times the radiologist may be able to say definitely and correctly that the patient either has or has not got a growth, in general it should be recognized—by radiologists as well as clinicians—that in many cases all he can say is that there is an abnormal opacity within the chest. This observation having been made, further full investigation is needed.

Lymphatic Glands.—Before considering bronchoscopy I must emphasize the need for a simple but nevertheless meticulous examination of the lymphatic glands and the abdomen. It is surprising how often one is asked to see a patient who has been under observation for many months and in whom no final diagnosis has been made, yet palpation of the neck reveals enlarged hard glands that show the diagnosis was literally at one's finger-tips if one used them properly (Fig. 2). In this way a correct diagnosis may often be made in a few seconds.

Clubbing.—The diagnosis may also be literally at the finger-tips in another manner. Well-marked clubbing of the fingers can in itself be a final diagnostic feature if noted in connexion with a chest illness of short duration

FIG. 2.—Careful examination for enlarged glands.

in a middle-aged patient—always, of course, excluding a simple overlooked empyema (Fig. 3).

Bronchography and Bronchoscopy.—Bronchograms should not precede bronchoscopy. There is a temptation to do this, perhaps because a bronchogram may be done more easily than a bronchoscopy.

It is seldom diagnostic and is often confusing or ruins the radiological picture for months. In any suspicious case bronchoscopy is indispensable, and if it is not procurable locally the patient should be referred to one of the many chest centres now about the country, where expert bronchoscopy can be carried out. Bronchoscopy not only provides exact diagnosis, including biopsy in a good proportion of cases, but is also valuable in assessment of operability.

Barium Swallow.—In this connexion it is not possible to avoid mentioning another simple investigation that is more often than not omitted, which is often conclusive, and which should never be dispensed with—barium examination of the oesophagus. If this is done, again with meticulous care, and in addition to screening radiographs are taken for leisureed study and record, evidence of mediastinal involvement will often be revealed. The opacity due to the growth so often blends with the mediastinal shadow, making it impossible to assess its medial configuration. Contrast radiography with barium will enable this demarcation to be done (Fig. 4). Again, as with overlooked glandular involvement, one finds that this examination provides at once the information to make a diagnosis not only of growth but, unfortunately, of inoperability as well.

FIG. 3.—Well-marked finger clubbing is often a diagnostic feature.

overlooked glandular involvement, one finds that this examination provides at once the information to make a diagnosis not only of growth but, unfortunately, of inoperability as well.

Indications for Radiology.—There remains the question of how often one is justified in submitting patients to radiography when some relatively minor chest symptom is present. It is clearly not practicable to have every patient with a cough radiographed. Clinical judgment on the part of the doctor is essential in this selection, and it must be emphasized that it is the change in character of a cough or its failure to resolve rapidly under simple treatment that should lead to x-ray examination.

It should be possible to increase greatly the facilities for x-ray examination of the chest, and this should be one of the earliest duties of the health authorities. Since 1942 the Bermondsey and Southwark health authorities in the district around Guy's Hospital have encouraged doctors to send for radiography any patient presenting any chest symptoms. In this way, apart from the discovery of other chest diseases, many cases of bronchial carcinoma have been

FIG. 4.—Barium examination of the oesophagus may reveal extensive mediastinal involvement.

detected at a much earlier and more favourable phase than would otherwise have been the case. Unfortunately, even this policy does not ensure a high proportion of operable cases, but it is incontestably sound and should be widely followed.

The first essential for early diagnosis is for the doctor always to bear in mind the possibility of the condition and so apply his clinical ability to discover the suspicious case. The next is the access to good radiology. Reference to a special thoracic unit for completion of the diagnosis and final assessment should then follow naturally.

The illustrations in this article were drawn by Miss S. Treadgold, of the Department of Medical Illustration, Guy's Hospital.

LONDON'S HEALTH SERVICES

TRANSITION PHASE OF 1948

The changes which took place in the health services of the London County Council in the middle of 1948, with the coming into operation of the National Health Service Act, provide the opening theme of the recently issued¹ report of the County Medical Officer of Health. Overnight the Council said farewell to its 98 municipal hospitals, and at the same time it welcomed the maternity and child welfare services, the vaccination and immunization services, and the tuberculosis care and aftercare services of the Metropolitan boroughs. The transition was effected with such smoothness that the patients in hospital beds on July 4-5 and the women attending clinics were all unaware of any change in the administrative structure. London now comprises nine health divisions, each with a medical officer in charge. One day it will comprise 162 health service areas, each, it is hoped, with a comprehensive health centre.

The year 1948 was a very healthy one for London. The general death rate (11.1 per 1,000 population), the infant mortality rate (31 per 1,000 live births), and the maternal mortality rate (0.77 per 1,000 live and still births) were the lowest recorded. Of London boroughs Lewisham and Kensington had the lowest death rate, Bermondsey the lowest infant mortality rate (16 per 1,000), and Chelsea the highest (40).

There were lowered mortality rates for almost all the principal causes of death, but deaths from cancer showed a slight rise for the second year. In London the cancer mortality is higher than in England and Wales as a whole. It is, however, not as high as a misprint in Table 4 would make it appear. This Table gives 7,915 as the number of deaths of females from cancer in "all other sites" (than the four specified), compared with 2,713 for males; the figures for females should be 1,915.

Mortality rates for all the respiratory diseases were very low, and there were further falls in the notification rates for infectious diseases, except in the case of measles. Scarlet fever, which fifty years ago caused 1,000 deaths annually in London, caused only two in 1948, and the deaths due to whooping-cough are only one-thirtieth of what they were at the beginning of the century.

The fall in the incidence of diphtheria reflects the success of the immunization campaign. In 1938 there were 205 deaths from diphtheria at all ages, and in 1948 only 19. The total number of children under 15 who died as a result of diphtheria, measles, influenza, acute poliomyelitis, and polio-encephalitis combined was almost the same as the number of children who died as a result of traffic accidents on the road.

The morbidity figures for pulmonary tuberculosis are still more than 20% higher than before the war, but how far this is due to increased zeal in seeking out cases cannot be assessed. Of the 6,000 primary notifications of all forms of tuberculosis in 1948, 1,265 were for persons of 45 and over.

¹London County Council. *Report of the County Medical Officer of Health and School Medical Officer for the year 1948*. London: Staples Press, Ltd. 2s. 6d.; by post, 2s. 10d.