country holidays. A child's mode of life, however, may be unphysiological, even although the economic and social circumstances in which it is living are of the best. Although the value of day nurseries, open-air schools, playgrounds, and playing-fields for our city children is being increasingly recognized, our town-bred children are still in need of more fresh air and sunshine.

The frequency with which acute rheumatism is preceded by acute tonsillitis indicates the great importance of preventing tonsillar infection, while chronic nasal and nasopharyngeal catarrh and mouth-breathing should not be neglected.

Co-ordination

At present a rheumatic child may be under the care or supervision successively of a child welfare scheme, children's hospital, family doctor, school medical service, national health insurance practitioner, and general hospital—none working in collaboration with another. The activities of all agencies engaged in the prevention and treatment of rheumatism, whether they are voluntary or civic, whether they are dealing with clinical, laboratory, or administrative matters, ought to be co-ordinated under one head, a rheumatism medical officer, whose functions would be comparable to those of a tuberculosis officer or V.D. officer, and who would likewise be responsible to the medical officer of health.

The Government is now awaking to the fact that measures ought to be taken to lessen the ravages of acute rheumatism. The Board of Education has issued a circular indicating the means whereby effect may be given to that part of the Government's educational programme which does not require legislation. The circular draws attention to the "need for increased provision for the special institutional treatment of children suffering or convalescent from acute rheumatism, since that condition, if not suitably treated, may lead to heart disease." It is suggested that this important problem may be met by using existing voluntary agencies or by co-operation in establishing the necessary residential schools. The Scottish Education Department has issued a similar circular drawing attention to the fact that "children who are ailing, debilitated, or in any way handicapped by their physical condition need special care." The department indicates that "it will be for authorities to review the provision of day open-air schools, residential schools, and holiday homes" and "to extend the accommodation where it is inadequate."

The onus of instructing the people, local authorities, and the State regarding health measures rests upon the medical profession, which has therefore the bounden duty of advising the community regarding the measures that ought to be taken to curtail the scourge of acute rheumatism. Now is a propitious time for that advice to be given.

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THORACOPLASTY IN THE TREATMENT OF PULMONARY TUBERCULOSIS

BY

F. H. YOUNG, M.D.CANTAB., F.R.C.P.LOND.

CONSULTING PHYSICIAN TO CHARING CROSS HOSPITAL; ASSISTANT PHYSICIAN TO BROMPTON HOSPITAL FOR DISEASES OF THE CHEST; MEDICAL OFFICER IN CHARGE, TUBERCULOSIS DISPENSARY, ST. BARTHOLOMEW'S HOSPITAL

During recent years the number of thoracoplasty operations performed in the treatment of pulmonary tuberculosis has steadily increased. In England the operations have been performed mainly by a few surgeons who have specialized in thoracic surgery, and who have by experience learnt which cases are suitable; but judging by the number of surgeons who have been attending operations at the Brompton Hospital it is probable that the operation will in the future be performed more frequently by general surgeons. These, however good their technique, will have had much less experience in the selection of cases. The increasing interest in thoracoplasty as a method of treatment is not confined to surgeons; many more doctors are sending up patients for operation, but often they are entirely unsuitable. There is thus some danger that unsuitable cases will be chosen for operation and, as improvements in technique are always occurring, that some patients will be rejected who would be suitable in the hands of the skilled surgeon.

In considering what type of cases are likely to be benefited by thoracoplasty it is necessary to emphasize the fundamental fact that thoracoplasty affects directly only a local area of the lung, whereas pulmonary tuberculosis affects the whole body. In every case of active pulmonary tuberculosis, in addition to the obvious diseased areas, tubercle bacilli are present in apparently healthy areas of the lung, in mediastinal glands, and intermittently in the blood stream.

Selection of Cases

The patient suffering from pulmonary tuberculosis is menaced in two ways: by (1) the spread of, and poisoning from, obvious lesions in the lungs, and (2) the appearance of new areas of disease by haematogenous or bronchogenous seeding. His need, therefore, is not only to win a local victory by healing a specific lesion, although this may be essential, but to regain his sovereignty over the tubercle bacilli in his body. The immediate effect of thoracoplasty can only be local, though secondary general results may and do occur; lesions in other areas may improve as the result of favourable changes in the immunological process produced by the improvement in the main lesion, but the changes are not uniformly beneficial, especially during the period immediately following the operation. Even locally thoracoplasty can only be a therapeutic success if healing was previously prevented by the mechanical causes which have been removed.

Thoracoplasty should be considered in all cases of pulmonary tuberculosis which have not achieved arrest of the disease by other means, but before recommending a thoracoplasty in any case the following conditions must be satisfied:

1. The lesion for which it is proposed must be the type which will heal if mechanical impediments are removed, and the thoracoplasty must be likely to remove them.
2. If lesions are present in the other lung they must be "inactive."
3. Fresh "flares" in apparently healthy areas must be improbable.
4. The patient must be fit for the operation.
5. The patient must have reached the most favourable moment for the operation.

6. Technical conditions must be satisfactory.

7. The functional result is all that matters to the patient, so it must be clear that a good functional result will be obtained.

Comparison with Artificial Pneumothorax

Pulmonary tuberculosis usually begins as an acute lesion, although often the general reaction is negligible. This lesion spreads or heals according to the resistance and environment of the patient. Frequently partial healing takes place, and a system of caseation, cavitation, and fibrosis ensues. When this stage is reached complete rest or an artificial pneumothorax are indicated to produce arrest of the disease, and thoracoplasty does not come into the picture until these have failed.

The effects of a thoracoplasty are not the same as those of a complete artificial pneumothorax. The former produces neither the interference with the blood and lymph supply nor so complete a collapse as is obtained by the latter. A successful artificial pneumothorax is more efficient and less dangerous than a thoracoplasty, and should always be tried before a thoracoplasty, but should not be persisted with if inefficient. It has been urged that with large apical cavities extending apparently nearly to the pleura a pneumothorax is dangerous, and a thoracoplasty should be done immediately; I think that this idea is mistaken, for provided the pressures are kept low the adhesion joining the cavity to the chest wall will not be in danger of rupture. Although the pneumothorax is frequently unsuccessful, if collapse of a healthy lower part of the lung is obtained it will be protected during an upper-stage thoracoplasty from the disaster of an aspiration spread into the lower lobe, and can be allowed to re-expand slowly after the operation, when the danger is passed.

Type of Lesion

Ultimate success as a result of thoracoplasty seldom occurs in a patient with poor resistance. The appearance of fibrosis in the lesion is evidence of resistance in the patient, and without this evidence the thoracoplasty is usually contraindicated. Thoracoplasty produces its results by allowing the lung to retract, and so the only lesions which will be benefited are the fibroid or fibro-caseous, with cavitation. In this type of lesion if rest and artificial pneumothorax have failed it is because retraction is prevented by adhesions. Thoracoplasty allows retraction in the presence of adhesions, and it is here that its scope lies. But even if the case is of the fibrotic type, and thus likely to heal if retraction is allowed, thoracoplasty is not always successful in closing the cavities.

A thoracoplasty reduces the circumference of the thoracic cage, and hence the area available for the lung, provided that the mediastinum remains in the same position. Unfortunately in some cases the mediastinum is weak and gives way more easily than the cavities close. This is most likely to occur if the mediastinal structures are pulled to the affected side, if there is little evidence of fibrosis on the inner side of the lung, and if the cavity is not separated from the mediastinum by a considerable area of lung tissue; but it is impossible to be certain before operation whether the mediastinum is mobile. In cases where this is suspected it is well to be prepared to do an axillary stage, especially as at the subsequent operation it is frequently found that the mediastinum has become fixed.

Lesions in the Opposite Lung

A few years ago any lesion in the opposite lung was held to contraindicate a thoracoplasty on the worse side. Experience has proved that many cases with disease on the other side go through the operation without trouble. Before deciding to operate it is necessary to make sure

that the disease on the sounder side is not progressive. Occasionally in apical disease this can be decided on the x-ray findings. Otherwise the operation should be delayed and the patient kept in bed until, by serial x-rays, it can be decided that the lesion is quiescent as shown by the unchanged appearance. If the lesion appears to be improving further delay is usually advisable as the improvement may continue, and it is unlikely that the worse side will deteriorate under rest in bed. Even if quiescent the lesion must be considered from the point of view of position and magnitude. A lesion involving more than about a quarter of the lung should usually contraindicate the operation. Apical lesions are usually most benign and a fair amount of quiescent disease can be allowed, including small cavities. If the lesion is in the middle or lower lobes the amount of disease allowable is much less, and a cavity is a definite contraindication. In these areas no doubt must exist that the lesion is completely quiescent. Dry pleurisy seldom leads to trouble if there is no x-ray evidence of infiltration of the lung.

A patient unsuitable for thoracoplasty because of opposite side lesions may be made suitable by prolonged rest in bed. It should always be remembered that a thoracoplasty is never an emergency operation. If a patient under this treatment, pending a thoracoplasty, develops a spreading new lesion on the other side, it is pretty certain that he would have done so if the thoracoplasty had been performed.

"Flares"

One of the most disheartening features in the treatment of pulmonary tuberculosis is the sudden appearance of new disease in apparently healthy areas of lung. Most of these deposits are haematogenous; some patients seem far more prone to them than others, but it is impossible to say who are the susceptibles. The only clue lies in the history. Cases which have started acutely with febrile attacks and whose lesions have cleared completely without leaving fibrotic strands are more likely to have these spreads. With this history thoracoplasty should be embarked upon only after an adequate preparation by complete rest.

The other cause of "flares" is by aspiration of infected material from diseased to healthy parts of the lung. Recent physiology tells us that the main rebreathing takes place between the upper and lower lobes of the same side, and if many spreads occur by this means new lesions on the same side would probably be much more common than on the healthy side, which is not so. The only common aspiration spread is where a brisk haemoptysis takes place, and here the physical conditions are changed. Aspiration spreads into the lower lobe of the diseased lung do sometimes occur after an upper-stage thoracoplasty when the lower part of the thorax is intact. It is curious that this complication seems to be less frequent in America than in England. The prevention, however, is a matter of surgical technique, and cannot be dealt with here. As successful thoracoplasty will make this method of spread less likely it need not be discussed further.

Fitness for Operation

The age of the patient is important. Generally speaking, patients under 20 and over 55 are unsuitable; adolescent cases because the disease is of a type in which "flares" occur, and the later middle-aged because the heart muscle is frequently unhealthy and the recuperative powers are on the decline. Every case, however, must be taken on its merits. Any definite evidence of myocardial poisoning, incompletely compensated heart failure, or inefficient kidneys is a contraindication. Patients who have had pulmonary tuberculosis for many years must be approached with caution. If the course of the disease has been mainly atoxic the existence of the

disease over a long period will not usually affect the decision to operate. If there have been prolonged periods of toxæmia the outlook is not so favourable; amyloid disease may have started, and the heart muscle may be in a much poorer condition than is apparent. Patients who are more acutely toxic, but in whom the disease has not been present for very long, do not present so much a problem as to whether the operation should be performed as to when the most favourable time has arrived. Active disease in other organs, except the larynx, usually excludes a thoracoplasty. Tuberculous laryngitis is not a contraindication, as it is always secondary to the lung lesion. Cases with bronchitis must be approached with care, and if the bronchitis is extensive it constitutes a contraindication; most of these have a low vital capacity. If for any reason the vital capacity is more than 50 per cent. below normal, great care should be taken in planning the operation to put the minimum amount of functioning lung out of action.

When to Operate

In considering thoracoplasty nothing is more important than the choice of the correct time for operation. If it is possible by means of rest in bed with adjuvant treatment or by less drastic collapse methods to make the patient fitter, this should be done. On the other hand, the operation should not be postponed if the limit of improvement by such means has been reached. Speaking generally, if the limit of improvement by other means has been reached the case requiring thoracoplasty will tend to become a less favourable risk as time goes on. When the patient knows that thoracoplasty has been decided on, undue delay should be avoided unless there is a reason for it. It is the duty of the physician to present the patient to the surgeon in the best possible psychological as well as physical condition.

Problems of Technique

The tuberculous patient if not very toxic stands up to short operations comparatively well, but the mortality rises rapidly as the time taken for the operation increases; hence the experienced and dexterous surgeon operating with a skilled assistant will always obtain better results than surgeons who perform the operation infrequently. A skilled anaesthetist with a wide experience of thoracic surgery will help greatly in obtaining good results. On the Continent thoracoplasty is often performed under local anaesthesia only. Equally good results are claimed, but the preference for this method is probably due to the scarcity of skilled anaesthetists, and the effect on the morale of patients (at any rate British) is often bad. It will thus be realized that a surgeon should be able to widen the scope of the operation if he is working with a trained team as compared with what he could safely undertake with less skilled assistance. But a skilled team at the operation is not sufficient in itself; the immediate after-care has many pitfalls for the inexperienced. No physician should recommend a thoracoplasty unless he is satisfied that adequate technical skill and conditions are present.

In England the weather must be considered; personally I prefer to avoid recommending cases to surgeons for thoracoplasty in London between November and March, unless there is special cause. The onset of foggy weather or the intervention of an attack of influenza during the week after the operation is likely to lead to bronchopneumonia with fatal results.

The Functional Result

The patient needs the greatest possible physical and mental health. The anatomical and radiological results only interest him from their bearing on this point of view. Figures have been published recently by Brown

and Sampson which show that of what they call "good chronic cases,"* treated at Trudeau Sanatorium, 80 per cent. are alive and 50 per cent. are working at the end of five years, and 64 per cent. are alive and 52 per cent. are working at the end of ten years. It must be remembered, however, that Trudeau patients are frequently well-to-do and likely to live under good conditions; thus the figures are not generally applicable.

The subject of a thoracoplasty is crippled to a lesser or greater degree. The mortality from the operation, though small, is not negligible. There are thoracoplasty cases which are physical and mental wrecks, though no longer suffering from active tuberculosis. Hence the patient's probable condition with or without the operation must be considered from a wide angle.

Thoracoplasty represents the last stage in the active treatment of any tuberculous lesion in the lung. An error made in the selection of the case, or the stage in the disease when the operation is performed, can never be repaired, but in no form of treatment will skilled collaboration between the physician and the surgeon be more amply repaid.

A NOTE ON LARYNGEAL VERTIGO WITH RECORD OF CASE

BY

DOUGLAS K. ADAMS, M.A., B.Sc., M.D.,
M.R.C.P., F.R.F.P.S.

FIRST ASSISTANT TO REGIUS PROFESSOR OF MEDICINE, GLASGOW
UNIVERSITY; VISITING PHYSICIAN, STOBHILL HOSPITAL,
GLASGOW; CONSULTING PHYSICIAN, DUMFRIES AND
GALLOWAY ROYAL INFIRMARY, DUMFRIES;
ASSISTANT PHYSICIAN, WESTERN
INFIRMARY, GLASGOW

The following case is of interest on account of its rarity. The patient, a manufacturer aged 35, gives the following account of his illness.

In March, 1935, he developed a severe cough, which persisted for a period of three weeks. In view of its spasmodic nature he thought that it might be whooping-cough, from which disease he had not previously suffered. During one attack of coughing, while walking in his garden, he suddenly became momentarily unconscious, and fell to the ground. He immediately regained consciousness, and on entering his house made the remark "Have I been sleeping?" The attacks of coughing subsided, but in April his wife and two children developed a spasmodic cough, which was medically diagnosed as whooping-cough. All three recovered from a mild attack of this illness without the occurrence of any complications. Towards the end of August the patient's cough returned. On August 29th, during an attack of coughing, which was unaccompanied by cyanosis, he again became momentarily unconscious, and fell to the ground. He states that on recovering from the attack he felt slightly sleepy. On a subsequent occasion while coughing he fell into the fireplace and sustained serious bruising. Up to this point he had not been inclined to regard his illness seriously. In the next attack he was driving his car when he commenced to cough. Realizing the danger in which he was placed he attempted to stop the car, but before he could do so he had become unconscious and crashed into a tree. When he regained consciousness he found the car had travelled a distance of twenty-five yards. His head had fallen forward on the steering-wheel and he had sustained extensive bruising.

* A "good chronic" is a case with a cavity at least 2 cm. in diameter which for three months has had no symptoms of toxæmia on some exercise. Tubercle bacilli may or may not be present, but expectoration must not be excessive.