sodium, 2 gr. (0.13 g.) twice daily for a day or two (from which they received much benefit), followed by 1 gr. (65 mg.) three times a day, in order to avoid dropping them from the trial; it was considered justifiable, however, to include them in the series, since they had completed more than half of the trial. It is of interest also that three patients who started on benactyzine in the first fortnightly period gave up with complaints of adverse effects, whereas no patients gave up in either period while on placebo. This reinforces the conclusion that the benactyzine administration gave no better results than the placebo; actually, the results were probably less good.

Ten patients had the three E.E.G. recordings necessary to compare the resting record with that after 12 days' benactyzine by mouth and 12 days on placebo (not necessarily in that order). Eight of these had normal baseline records, one an immature type of record, and the other a complex record of no specific pathological condition. Three records showed no change with drug or placebo, while the other records showed varying change in the alpha rhythm. In five placebo records the alpha rhythm was less persistent and in two it was more persistent, while in three benactyzine records it was less persistent and in four more so. There was thus no evidence that the drug taken by mouth in this dosage had any consistent effect on the E.E.G.

These findings indicate that benactyzine hydrochloride was no better than a placebo, and in some cases probably worse, in relieving the symptoms of tense, anxious psychoneurotic patients in hospital.

Discussion

It had been intended to continue the trial until there were sufficient patients from whom results of statistical significance could be derived, but in view of the unequivocal nature of the results obtained it was felt to be unjustifiable to continue the trial.

These results must be considered in the light of other workers' findings, and they do in fact bear out some of the observations hitherto published. Munkvad first pointed out that results on in-patients were unsatisfactory, while Raymond and Lucas found that their cases of neurotic depression were not helped. Patients with this type of psychoneurotic illness are those most often admitted to hospital, and in this series seven were cases of neurotic depressions and one was a case of hypochondriasis. Raymond and Lucas noted that the duration of symptomatology was a factor; the longer the symptoms had been present the less likely were the patients to respond, as was found in this series.

Age range is also important, as in the older patients the diagnosis of psychoneurosis usually implies an illness of prolonged and fluctuating course. This would explain the differences obtained in the male and female groups in this series. The difference is one of age rather than of sex, because the men are in a younger age group (17 to 57, average 36), while the women's ages range from 33 to 58, average 44.5.

From our findings, this drug is of no appreciable value in dealing with illnesses with more deeply rooted features—that is, more constitutional in type. Any action found by other workers is probably only that of a therapeutic barrier between the patient and minor external stresses in such cases as one is more likely to find in out-patients.

In comparing our results with those of other workers, it must be kept in mind that the seeing of patients by the therapist for prolonged periods in itself exerts an effective therapeutic pressure, so that good results can very often be achieved irrespective of any drug administration. In psychiatric cases the true pharmacological action of a drug may probably be evaluated more accurately in a carefully controlled trial over a relatively short but effective period than in more prolonged studies, where other variables become increasingly important. Once the pharmacological effect is assessed, its value as an adjunct, for example, to psychotherapy is more apparent.

Conclusion.—The conclusion which can be drawn from this series is the negative one that benactyzine hydrochloride was not an effective drug for the 13 typical in-patient psychoneurotics studied in this paper, although the small number treated renders caution necessary before making dogmatic statements. Nevertheless, it seemed unethical to continue the trial, since no apparent benefit was derived from the drug.

Summary

A self-controlled, self-recorded clinical trial involving 13 patients suffering from neurotic illness in which anxiety and tension symptoms predominated was carried out. Each patient received 2 mg. of benactyzine hydrochloride three times a day for two weeks and an inert control tablet of similar appearance and taste for a further two weeks, approximately equal numbers of patients starting on the active and inert drugs.

No difference was found in the therapeutic result, and, while the small numbers involved militated against a dogmatic conclusion, we thought that the drug was of no appreciable value in the treatment of the 13 relatively typical psychoneurotic in-patients under the conditions of this trial.

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APICOLYSIS WITH FASCIAL FIXATION

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In the surgery of pulmonary tuberculosis the recent trend has been towards excision rather than collapse. Nevertheless, for some forms of upper lobe disease many believe that collapse is the treatment of choice. The ideal operation would be one which achieves this with the least possible mutilation, while at the same time preserving the maximum respiratory function. Thoracoplasty, extrapleural pneumothorax, and plombage comprise the surgical armamentarium.

Thoracoplasty as originally described by Sauerbruch has undergone considerable modification. The modern thoracoplasty, with a mortality in the region of 2%, causes the patient little upset, and with adequate post-operative management there is little residual disability. The results of this operation are good. Nevertheless, the removal in part or *in toto* of the upper four or five ribs is still, for the patient, a formidable procedure, and we

feel that with the controlled type of disease now being referred for surgical treatment the same objective in many cases would be achieved by less drastic means.

Perhaps the oldest of the collapse operations is extrapleural pneumothorax, introduced by Tuffier in 1891. From a theoretical standpoint it is attractive; from a cosmetic angle it is excellent; but in practice it has proved disappointing. The procedure has undergone many revivals, but the prospect of air refills for periods varying from three to six years is not appealing. Moreover, although modern chemotherapy has greatly reduced the incidence of pyogenic and tuberculous

infection of the dead space, it has not completely eliminated this hazard.

More recently attempts have been made to achieve a selective collapse of the diseased pulmonary tissue by the introduction of a variety of foreign materials into either the extraperiosteal, extrafascial, or the extrapleural planes. "Lucite" balls, strips of "polythene," and the "polystan" sponge have been used. The introduction of a mass of foreign material into a dead space is always a dangerous procedure because of potential infection. Although recent reports on the use of the polystan sponge are encouraging, such procedures have all too often in the past been followed by infection or fistula formation.

For the surgical management of selected cases of apical pulmonary disease, we have devised a one-stage operation which, while preserving maximum pulmonary function, does not entail the deformity of thoracoplasty, the introduction of foreign material as in plombage, or the tedious refills of extrapleural pneumothorax. In this operation a selective collapse is obtained by mobilization of the lung apex in the extrapleural plane and its fixation by a pedicled fascial flap (Figs. 1 and 2).

Surgical Anatomy

The fascia of the postero-lateral thoracic wall is a well-defined structure having a distinct superficial layer lying on the deep aspect of the trapezius, latissimus dorsi, rhomboids, and serratus anterior muscles, and an equally distinct deeper layer covering the costo-intercostal surface of the related chest wall. Between these two components there lies a layer of areolar tissue traversed by fibrous strands.

The deeper layer, termed by Latarjet and Juttin (1953) the extrathoracic fascia, lies immediately superficial to the ribs and related intercostal muscles. It arises from the posterior spinous processes of the upper nine dorsal vertebrae and extends laterally to fuse with the digitations of the serratus anterior along the line of its origin, from the second to the eighth ribs in the anterior axillary line. Superiorly the fascia fuses with the fascia lining the deep surfaces of the levator scapulae medially, and the trapezius laterally; inferiorly it fuses with the fascia on the deep surface of the latissimus dorsi, along a line parallel with the ninth rib.

The superficial layer of fascia lines the deep surfaces of the serratus anterior laterally, and the rhomboids, trapezius, and latissimus dorsi medially. The deep and superficial layers fuse along the line of origin of the serratus anterior laterally, and the origin of rhomboids and trapezius medially (Figs. 3 and 4).

Operative Technique

With the patient in the lateral position, a J-shaped incision is made, extending from the level of the fourth dorsal vertebra downwards close to the spine and curving laterally along the line of the eighth rib to the posterior axillary line. The trapezius and rhomboid muscles are divided close to the spine, and the latissimus dorsi laterally in the line of the skin incision. After division of the muscles, the fascia which lines their under surfaces is separated along the whole length of the incision, leaving the muscle fibres bare. As the cut muscles are gradually retracted from the chest wall, the stripping of the fascia is continued under the scapula, baring the fibres of the serratus anterior to their insertion. The fascia is now incised along the lateral border of the erector spinae muscles. This free edge is carefully elevated and separated laterally from the ribs and intercostal muscles to the origin of the serratus anterior. The fascia is now divided along the second rib and down the anterior axillary line to the level of the fifth rib, taking a little of the serratus anterior muscle in the edge for extra

FIG. 1.—Postero-anterior radiograph of chest, showing a tuberculous cavity behind the left clavicle.

FIG. 2.—Postero-anterior radiograph of chest after the operation of apicolysis, showing the degree of collapse and cavity closure.

strength. Inferiorly the fascia is divided along the line of the eighth rib. Thus, at the anterior end of the wound the fascia is pedicled from the fifth to the eighth rib, and the mobilization is complete.

The fourth and fifth ribs are divided posteriorly, the thorax is entered extrapleurally in the fourth interspace, and

FIG. 3.—Horizontal section of the thoracic wall at the level of fifth dorsal vertebra. (1) Erector spinae group. (2) Serratus superior posterior. (3) Rhomboid. (4) Trapezius. (5) Serratus anterior. The dotted line represents the extrathoracic fascia, the solid line represents the fascia deep to rhomboids and serratus anterior. The two lines merge medially and laterally, as shown.

the fourth intercostal bundle is divided and ligated. The lung is gently separated extrapleurally from the chest wall above and below the interspace and a self-retaining retractor inserted and opened. The extrapleural apicolysis is completed under vision, the extent of the strip being governed

by the degree of collapse required, but the lung is always stripped off the mediastinum down to the hilum. This enables the apex to be pulled laterally and stitched to the fifth intercostal muscle so that the mediastinal aspect of the upper lobe now forms the roof.

The fascia is introduced through the fourth intercostal space and sutured round the mediastinum and intercostal muscles to maintain the apical collapse. On the right side a central mediastinal stitch secures the free edge of the fascia to the tracheal fascia at the origin of the right main bronchus. On the left

FIG. 4.—Sagittal section of thoracic wall medial to the scapula. (1) Levator scapulae. (2) Rhomboid. (3) Trapezius. (4) Latissimus dorsi. The dotted line represents the extrathoracic fascia and the solid line the thick fascia on the deep surface of the muscles. They merge superiorly and inferiorly as shown.

side the mediastinal fascia under the arch of the aorta is used, avoiding the recurrent laryngeal nerve. The fascial fixation is completed by a series of interrupted silk sutures securing the margin of the fascia to the intercostal muscles at the level of the pleural reflexion. With the fascia securely

sutured and stretched tightly over the lung, the intercostal space is closed and the wound sutured. No drainage tube is used.

Discussion

In the treatment of pulmonary tuberculosis, many years must elapse before success can be claimed for any form of therapy. Some of the older techniques have proved effective and reliable, but nevertheless the problem must be constantly reviewed against the background of increasingly effective antibiotics, and we must be prepared to modify and adapt our surgical technique accordingly. In recent years the effectiveness of antibiotic therapy has greatly increased with the introduction of new drugs and the trend towards prolonged administration. In many cases of unstable upper lobe disease, thus treated, it is difficult to decide when surgery should be recommended. Where surgery is advised in such borderline cases, deformity must be avoided and maximum lung function preserved. These criteria are fulfilled by the operation of apicolysis already described. Because the thoracic cage remains intact, postural deformities of the cervical and thoracic spine do not develop, thus permitting early ambulation and a more rapid convalescence than in a modern thoracoplasty.

The knowledge that no ribs have been removed, and the complete lack of deformity, benefits the patient psychologically and aids him in no small way in his mental adjustment to the disease.

The possibility of tuberculous infection in the space was appreciated, and, to minimize this, care is taken during the apicolysis to avoid damage to diseased lung tissue. The selection of cases is important. Large cavities near the lung surface are probably unsuitable for this type of collapse, as the apicolysis may deprive such a cavity of part of its blood supply and lead to necrosis of the cavity wall and bronchopleural fistula. We selected cases suffering from unstable apical tuberculosis which had been regarded as suitable for treatment by thoracoplasty, excluding only the large peripheral cavity.

The operation has been carried out in 30 cases in twelve months, and, of these, 15 have been observed for a period of over six months. There have been no deaths. The operation is well tolerated and the patients are allowed up on their third post-operative day. With the exception of one case of excessive bleeding into the extrapleural space there have been no complications. In all cases the initial collapse has been maintained and there has been no post-operative spread of the disease. Where a positive sputum was obtained prior to operation, conversion has been achieved.

Summary

A new technique is described for the surgical management of apical pulmonary tuberculosis. The operation has been performed on 30 cases in twelve months, with excellent results. There have been no deaths and no complications. The advantages of the operation are the lack of deformity and the conservation of lung function. Some years must elapse before the value of the procedure can be assessed.

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The 1957 *Whitaker's Almanack*, now available, is one of the largest editions ever published. Several new features have been introduced and the basic sections have been brought up to date. This most useful of all general reference books costs 18s. 6d. for the complete edition, 10s. for the shorter edition, and 35s. for the library edition.