taken at biopsy from patients with miliary shadows in the lungs. Some of these cases are diagnosed on all available evidence as "sarcoidosis," and others as benign chronic miliary tuberculosis; a small group seems to be "on the fence" between the two. I have a feeling that further experimental study of the syndrome called "sarcoidosis" may provide a clue to the problem of immunity in tuberculosis.

Summary

The treatment of pulmonary tuberculosis is reviewed in the light of recent advances.

The aims of treatment are: (1) permanent healing of the lesions; (2) minimal loss of respiratory function; and (3) the attainment of these in the shortest time.

In addition to the long-established principles of rest, diet, fresh air, and graded exercises there are three main therapeutic weapons: (1) antibacterial drugs without collapse therapy; (2) collapse therapy, either medical or surgical; and (3) resection of the diseased portion of lung.

The value of the various forms of treatment is assessed on the basis of results obtained by the author and by other workers in Great Britain.

The finding that large numbers of tubercle bacilli are present in some lesions and none in others is referred to, and the need for further research into this question is stressed.

Further experimental study of the syndrome called "sarcoidosis" may provide a clue to the problem of immunity in tuberculosis.

My grateful thanks are due to my registrars, Dr. J. K. Gurling and Dr. W. H. Helm, for their valuable assistance in reviewing the records of my cases; also to my secretary, Miss Hope Daniel, for her persevering efforts in following up the patients.

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In his Report for 1953, Dr. Stuart Laidlaw, Medical Officer of Health for the City of Glasgow, writes: "One can readily imagine the public outcry had diphtheria immunization been available only to the well-to-do. But it is little encouragement to those protagonists of free preventive measures that so few avail themselves of the opportunities offered. Public apathy is not restricted to diphtheria immunization alone. Only 17% take advantage of free infant vaccination, though Glasgow is a seaport town with an air terminal. Many contacts of open cases of tuberculosis decline to be x-rayed. Many parents ignore the opportunity of B.C.G. protection for children of school-leaving age. There is also the unsatisfactory response by expectant mothers to the offers of free dental treatment and supplementary vitamins despite the fact that these provide additional safeguards to themselves and the unborn child."

CURRENT THERAPY IN PULMONARY TUBERCULOSIS IN THE UNITED STATES*

BY

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[WITH SPECIAL PLATE]

The study forming the subject of this lecture was carried out under the auspices of the Committee on Non-Surgical Collapse Therapy of the American College of Chest Physicians to determine the kind of therapy advised as the initial treatment in different cases of pulmonary tuberculosis by physicians who are recognized experts in this disease. Ten representative cases were selected. They were of ordinary forms of tuberculosis that might be seen any day in such a physician's office. They differed as regards age, race, sex, and type of disease, but had no unusual or bizarre complications. All had positive sputum. They could be grouped, according to the classification of the National Tuberculosis Association, into minimal, moderately advanced, and far advanced. These patients had been known to us for a long time. It was endeavoured to make the initial problem as simple as possible. A similar study was carried out on these same ten cases in 1948.

The method of investigation was as follows. A brief case history with a single chest radiograph of each case was sent, with an accompanying questionnaire, to the one hundred physicians selected as representative of the top clinical thinking in their respective areas throughout the United States. The questions asked were: (1) Would you use bed rest alone as therapy for this type of case? (2) Would you add drug therapy? (3) Would you use collapse therapy? (4) Would you use surgery? (5) With the therapy indicated above, how long would you keep this patient on complete bed rest and in a sanatorium? In general, complete bed rest is interpreted as strict rest in bed with no bathroom privileges; the patient is not allowed out of bed at all for any reason. Modified bed rest is indicated as such.

In what follows the replies to the above questionnaire are analysed.

Drug Therapy

Drug therapy will be discussed for all of the cases together, because the same practitioners recommend practically the same dosages throughout the ten cases and most of them say they would start chemotherapy immediately. The length of time chemotherapy would be continued varied considerably, however, for the different patients.

Antimicrobial therapy is now generally accepted by the vast majority of chest physicians as part of the routine treatment of pulmonary tuberculosis, whatever the extent of the disease. Such therapy would be used as part of the basic treatment by 97%, with variation, according to the extent of the disease, only from 93% for minimal disease to 99.5% for far advanced disease. The drugs of choice were limited to streptomycin, *para*-aminosalicylic acid (P.A.S.), and isonicotinic acid hydrazide (isoniazid). Practically all the physicians would use combined and continuous therapy, with a marked preference for streptomycin plus P.A.S. A majority favoured the intermittent use of streptomycin in a dosage of 1 g. twice weekly, with P.A.S. by mouth to tolerance—about

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H. G. TRIMBLE: CURRENT THERAPY IN TUBERCULOSIS IN THE U.S.A.

FIG. 1.—Case III: Minimal bilateral tuberculosis with right pleural effusion.

FIG. 2.—Case VIII: Moderately advanced tuberculosis with solitary 3-cm. cavity at right apex.

FIG. 3.—Case IX: Moderately advanced acute bilateral tuberculosis, more extensive on left.

FIG. 4.—Case II: Far advanced tuberculous pneumonia.

FIG. 5.—Case X: Far advanced bilateral fibrocaceous lesions with cavity on left.

A. CHAKRAVARTI and G. CHAKRAVARTI:
GIANT-CELL POLYPHLEBITIS

Section of vein showing thickened and infiltrated wall with collections of giant cells (arrowed). $\times 65$.

12 g. daily. There was less agreement about the dosage of isoniazid, which varied from 3 mg. per kg. of body weight to 10 mg. per kg. with a majority using 3 to 5 mg. per kg. In the more acute far advanced cases there was a definite leaning toward combining all three drugs.

In the United States there is a strong trend toward standardization in the use of antimicrobial therapy. This is probably greatly influenced by what is called the Annual Conference on Chemotherapy of Tuberculosis under the auspices of our Veterans Administration, which acts as a forum for the presentation of various studies on the subject.

When the views on the length of time such therapy should be continued are studied no pattern evolves. There were recommendations for courses of from one month all the way to continuous therapy for three years. In minimal and moderately advanced disease a majority thought in terms of one year or less, with a considerable number favouring less than eight months; while in far advanced disease a majority would continue giving the drugs for one to two years. However, in both instances there were many recommendations that these broad generalizations would not cover.

As a corollary to the above it is interesting to note that there are now very few who use bed rest alone in the treatment of pulmonary tuberculosis—only 1%, in fact, of the total reporting. However, when we consider the use of antimicrobial therapy plus bed rest we find that 37% of the group as a whole favoured this as the treatment of choice. This percentage was made up very largely from the answers on the treatment of minimal disease, in which nearly three-quarters of the group favoured antimicrobial therapy plus bed rest.

Since 1948 the use of bed rest plus drugs and without collapse therapy has tremendously increased, at the expense of collapse therapy.

Treatment Recommended in Five Sample Cases

I will not discuss each of the ten cases separately, but will use as examples one minimal, two moderately advanced, and two far advanced cases (minimal, Case III; moderately advanced, Cases VIII and IX; and far advanced, Cases II and X).

Case III: Minimal pulmonary tuberculosis, bilateral, productive, with pleural effusion on the right, in a 43-year-old white female. Chest radiograph (Plate, Fig. 1) revealed a homogeneous density in the right pleural cavity (pleural effusion) and infiltration at both apices—more marked on the right.

The graph for this case (Graph 1) shows that in 1953 practically no one would treat this pleural effusion in association with minimal bilateral tuberculosis by bed rest alone, in contrast to 37% in 1948. However, approximately three-fourths would use bed rest plus chemotherapy. As many as 98% would use chemotherapy plus other methods, with a marked decrease in the use of collapse therapy since 1948,

GRAPH 1.—Case III: Comparison of recommendations for treatment in 1953 with those in 1948. Chemotherapy alone with bed rest was prescribed by 74% in 1953, as against 14% in 1948 (indicated by vertical dividing line).

largely at the expense of pneumothorax, which fell from 37% to 1%. A very few would think surgery advisable for this patient.

Case VIII: Moderately advanced pulmonary tuberculosis, unilateral, with a solitary 3-cm. cavity at the right apex, in a 34-year-old white male (Plate, Fig. 2).

Most physicians would now use chemotherapy. One-third would initiate a prompt reversible collapse, about half of these using pneumoperitoneum and the other half a right pneumothorax. Two-thirds would, however, prefer surgery after the lesion had shown some stabilization by bed rest plus drugs. The large majority would expect maximum response to drug treatment and relatively stabilized lesions within three to six months. Fifty-two physicians would prefer resection and eleven a thoracoplasty.

If the treatment prescribed now is compared with that recommended in 1948 (Graph 2) it will be seen that in the case of this 34-year-old man with moderately advanced

GRAPH 2.—Case VIII: Comparison of 1953 with 1948. Chemotherapy alone with bed rest prescribed by 10% in 1953 and by none in 1948.

disease and a unilateral cavity nearly all would use chemotherapy, with a definite reduction in the use of reversible collapse therapy from 68% in 1948 to 31% at the present time. It is noteworthy that there has been a marked drop in the use of pneumothorax in favour of pneumoperitoneum since 1948. It is interesting, however, that 18% would still try pneumothorax, and continue it for three to five years in most instances if the collapse promptly became adequate. But surgery was the treatment of choice for this patient.

Case IX: Moderately advanced pulmonary tuberculosis, acute, bilateral, more extensive on the left, in a 34-year-old white female. Chest radiograph (Plate, Fig. 3) revealed a soft mottled infiltration in both upper lung fields, more extensive on the left.

Practically all the physicians would use chemotherapy in this case, and six out of every ten would favour reversible

GRAPH 3.—Case IX: Comparison of 1953 with 1948. Chemotherapy alone with bed rest prescribed by 37% in 1953, as against 26% in 1948.

collapse, only a very few advising resection. The collapse therapy recommended was pneumoperitoneum. No one at the present time would treat this moderately advanced, acute bilateral disease in a 34-year-old woman with bed rest alone, as compared with 28% in 1948 (Graph 3). However, 37% would use only bed rest plus chemotherapy. There has been some increase since 1948 in the number who would use reversible collapse therapy, 57% favouring pneumoperitoneum, while only 2% would use pneumothorax, in contrast to the 29% who recommended pneumothorax in 1948. Four would now advise surgery as the primary procedure, advocating resection.

Case II: Far advanced tuberculous pneumonia in a 31-year-old white female. Chest radiograph (Plate, Fig. 4) showed a diffuse homogeneous density occupying the upper half of the right lung field and containing a cavity.

All the physicians would use drugs in this case, 42% prescribing streptomycin and P.A.S., 30% streptomycin, P.A.S., and isoniazid, while 28% would use a combination of any two of these drugs. Thirty-two physicians would use pneumoperitoneum and eight would try to establish a right pneumothorax. Forty-nine would expect to do a resection after a period of bed rest and drug treatment lasting from five to ten months. Three would prefer thoracoplasty.

In this far advanced case of tuberculous pneumonia in a 31-year-old woman no one would treat the patient with bed rest alone, and there was complete agreement as to the use of combined antimicrobial drug therapy. There was a tendency to use all three drugs in this case and to give streptomycin daily at the beginning. The majority would use the drugs for from twelve to twenty-four months.

The use of collapse therapy has fallen from 58% in 1948 to 40% now (Graph 4), largely at the expense of pneumothorax, with a correspondingly large increase in the use of

GRAPH 4.—Case II: Comparison of 1953 with 1948. Chemotherapy alone with bed rest prescribed by 15% in 1953, as against 23% in 1948.

pneumoperitoneum. Three years seemed to be the recognized time for pneumothorax to be continued. There was much disagreement as to how long to continue pneumoperitoneum, the largest group favouring five years, but substantial numbers indicated three or four years and a few suggested shorter periods. Note the definite increase in the use of resection at the expense of thoracoplasty and collapse therapy. Physicians who favoured resection tended to recommend a longer stay in a sanatorium than those who preferred collapse therapy.

Case X: Far advanced pulmonary tuberculosis, fibrocaceous lesions in the upper half of both lungs, with cavity on the left, in a 57-year-old white male. Chest radiograph (Plate, Fig. 5) showed old calcified lesions at the right apex, multiple scattered nodules, little fibrosis, but soft infiltration throughout the right lung in the upper two-thirds. In the left lung there was a soft mottling throughout the upper third, with a 1.5-cm. cavity in the first interspace.

In this case of far advanced pulmonary tuberculosis with cavitation and bilateral fibrocaceous disease in a 57-year-old man no one would now use bed rest alone, but 35% would use only bed rest plus chemotherapy. More would use rever-

GRAPH 5.—Case X: Comparison of 1953 with 1948. Chemotherapy alone with bed rest prescribed by 35% in 1953, as against 23% in 1948.

sible collapse therapy now than in 1948—almost two-thirds, compared with 44% in 1948 (Graph 5). There is a marked shift toward the use of pneumoperitoneum. All would now use chemotherapy. Very few considered this a case for surgery.

Summary of Recommendations

The recommendations for treatment can best be summarized by grouping the ten cases according to the three degrees of severity referred to earlier.

For the minimal group few would use bed rest alone. 72% would use bed rest plus chemotherapy. About 20% more would add various forms of collapse, mostly pneumoperitoneum, but a few pneumothorax. Even in the minimal cases a small percentage would recommend surgery, mostly resection.

In moderately advanced disease a very few would recommend bed rest alone. Less than 40% would use chemotherapy alone with bed rest, a larger number—60%—adding collapse or surgery. Three-fourths of those advising collapse would use pneumoperitoneum, the other one-fourth pneumothorax. Resection was recommended by 20%.

In far advanced disease no one recommended bed rest alone. A small number would use chemotherapy plus bed rest. About 80% recommended collapse therapy or surgery with chemotherapy and bed rest. Almost 60% would use pneumoperitoneum; 21% would perform resection.

Concluding Remarks

Just a personal word in closing. We have found this study very interesting. We actually treated these patients somewhat differently. Our own therapy would be complete bed rest until the sputum disappeared or became negative on examination by the concentration method. All of these patients would receive drugs, usually a combination of all three and for a period of approximately eighteen months. We use much reversible collapse therapy, with pneumoperitoneum as the method of choice and as the initial treatment in most cases. We review our results in three months, and if cavities that are not well on the way to closing are present we may then consider pneumothorax. However, all patients are examined bronchoscopically before being subjected to this procedure. Actual tracheo-bronchial disease is a contraindication to pneumothorax, though it is not to pneumoperitoneum. We may then turn to surgical procedures. With some patients we feel from the beginning that surgery will eventually be necessary. We use bed rest plus drugs plus pneumoperitoneum as a

damping-down method for the acute exudative lesions, expecting the surgeon to remove the cavity-bearing area at a later date.

Tracheo-bronchial disease is still a problem. Many patients in whom tuberculous disease of the walls of the bronchi can be visualized through the bronchoscope are not permanently cured by drugs. If such tracheo-bronchial disease is removable, we feel that localized segmental resection is eventually indicated.

We have termed these methods a "dynamic approach" to the problem of tuberculosis. With prompt diagnosis and adequate treatment more patients with pulmonary tuberculosis are now getting well than ever could have done so previously.

Summary

The trend of treatment of pulmonary tuberculosis in the United States is discussed on the basis of a questionnaire sent in 1953 to one hundred physicians in that country. Recommendations were sought as to the treatment of ten selected cases of the disease. The replies are analysed and compared with those received in answer to a similar inquiry in 1948 concerning the same ten cases.

The investigation has shown that since 1948 the use of bed rest plus drugs and without collapse therapy has enormously increased. Collapse therapy is, however, still favoured in cases of more advanced disease, but pneumoperitoneum seems to have largely replaced pneumothorax as the procedure of choice.

A CASE OF GIANT-CELL POLYPHLEBITIS

BY

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[WITH SPECIAL PLATE]

Since 1941 attempts have been made to bring under a single heading such apparently diverse clinical conditions as polyarteritis nodosa, lupus erythematosus, scleroderma, and dermatomyositis. Banks (1941) has suggested that there is a common denominator in these diseases. Klemperer, Pollack, and Baehr (1942) proposed grouping them under the term "collagen diseases," fibrinoid degeneration of collagen having been found to form the basis of all of them. Claims have also been advanced for including in the group such diseases as rheumatic fever, Buerger's disease, and even serum sickness and the calcinosis. In spite of attempts at generalization, however, the "collagen group" of diseases remains an assortment of heterogeneous clinical varieties, and the specific conditions which should be included or excluded continue to be a matter for speculation.

Polyarteritis nodosa is predominantly a vascular collagen disease. Recognized as early as 1866 (Kussmaul and Maier), it has received widespread recognition only in recent years. Though an appreciable number of cases have been reported in the world literature, so far only three cases occurring in India are on record, the first of which was reported by one of us (Chakravarti, 1951). It must be appreciated, however, that polyarteritis nodosa has hitherto been recognized as an entity only

on the basis of the clinical findings; that it has any relationship to infection, hypersensitivity, or allergy is far from being established, and experimental attempts to arrive at its aetiology have been without success. But, unless the aetiology of such diseases as this is established beyond doubt, cases of arteritis presenting aberrant manifestations differing from the recognized clinical picture will raise problems of identification and lead to claims for the discovery of new entities. Thus a variety of arteritis with a different age incidence, vascular distribution, and prognosis was described in 1932 by Horton, Magath, and Brown. They gave it the name of "temporal arteritis." Giant cells formed the distinctive feature in its pathology, and, though it was claimed that giant-cell arteritis and polyarteritis are identical, this view was not supported by Harrison (1948).

In the light of the above considerations we describe below a case in which the clinical picture resembled in some respects that of polyarteritis nodosa, yet differed from it in a number of essential features. Clinically it was considered to be an example of polyphlebitis rather than of polyarteritis, but histological examination of the vascular lesions revealed the presence of giant cells, so long considered almost characteristic of temporal arteritis. The case would therefore appear to be of a hitherto unrecognized type of arteritis.

Case Report

A married woman aged 28 years; mother of four children, the last of which was born six years ago. No history of miscarriage. Past history of colitis, lasting three months, seven years ago. Streaks of blood in sputum during a febrile bout lasting one week three years ago. Husband's two brothers died of pulmonary tuberculosis, six and three years ago respectively.

Present Illness

The patient had suffered from a low-grade, irregular fever and malaise for the past year. One year previously slightly painful, tender spots had appeared on the medial aspects of the thighs, followed by a similar spot on the anterior aspect of the right forearm. For six months there had been persistent and gradually progressive anorexia and asthenia. A constant dull pain in the left hypochondrium, with exacerbations when the patient lay on her left side and on walking, had been noticed for the past three weeks. Since the last attack of colitis seven years ago there had been frequent bouts of diarrhoea. There were no cardiac complaints, no subjective urinary symptoms or respiratory trouble, and no signs of mental disturbance.

Clinical Examination

On examination the patient was found to be sickly, of asthenic build, pale, and anaemic. In the left eye there was phlyctenular conjunctivitis. Temperature 99° F. (37.2° C.); pulse rate 128 and respirations 32 per minute. The fingers were not clubbed. There was no enlargement of cervical or axillary lymph nodes, but the inguinal nodes showed discrete enlargement; these were neither painful nor tender. The spleen was palpable three fingerbreadths below the costal margin; it was soft and acutely tender, but there was no evidence of perisplenitis. The liver was palpable two fingerbreadths below the costal arch; it was rather soft, but peritoneal or paravertebral tenderness was absent. No abnormality was detectable in the colonic or renal area or in the lungs. There was no obvious dilatation of the heart; a harsh systolic murmur was audible all over the praecordium, with maximum intensity in the left third space, in the parasternal line, conducted well out to the posterior axillary line, but no thrill or associated diastolic murmur; the pulmonary second sound was accentuated. Blood pressure 108/64 mm. Hg.