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TREATMENT OF PULMONARY TUBERCULOSIS

The introduction of effective antibacterial drugs has revolutionized the treatment of pulmonary tuberculosis. Whereas in the past the physician treating this disease has had to rely upon the natural resistance of the patient aided by bed rest and by the indirect effect of collapse therapy, he now has available methods of direct attack upon the tubercle bacillus; and the surgeon, previously restrained in the application of some of his more radical methods by the fear of complications, has now much greater freedom of action. These striking changes in the practical management of pulmonary tuberculosis have tended to distract attention from important epidemiological changes which have been occurring more gradually but which may be of greater ultimate importance. As Dr. J. L. Livingstone points out in his Mitchell Lecture, published in the opening pages of this *Journal*, preventive medicine does more to eradicate tuberculosis than the efforts of the clinician in dealing with the sick. This, like most generalizations, needs qualification. It is true without reservation in relation to underdeveloped communities where the pool of infectious cases is too great to be much diminished by the provision of treatment on any practicable scale. But in communities in which good progress has already been made in the control of the disease it seems clear that rigorous clinical measures can make a significant and perhaps decisive contribution towards the removal of the last remaining sources of infection. Dr. Livingstone's main purpose in his lecture was to give an account of his own experience in the management of pulmonary tuberculosis, with special reference to collapse therapy. The measures which he uses include artificial pneumothorax, phrenic paralysis with pneumoperitoneum, and extrafascial apicolysis with "lucite" plombage of the type described by Cleland.[1]

Dr. H. G. Trimble's paper, also published in this issue (p. 250), provides an interesting companion to Dr. Livingstone's. Its approach is entirely different. It describes the analysis of the answers given by one hundred physicians in 1953 to a number of questions about the treatment they would use for ten representative cases of pulmonary tuberculosis which were presented to them in the form of brief case histories and radiographs. The answers are compared with the answers given to the same questions about the same patients in 1948. It is perhaps a valid criticism that the method of presentation of the cases to the physicians was of necessity artificial. It is to be hoped that no physician would seriously give advice about the treatment of a patient on the basis simply of a case history and inspection of a radiograph. Nevertheless Dr. Trimble's analysis gives some indication of change in opinion. It also shows very wide variation in present-day practice. Similar differences of opinion would probably be found in the answers to corresponding questionaries relating to the treatment of a number of other illnesses, especially those where both medical and surgical methods are in use—for instance, peptic ulcer. The most important trend among the American physicians was the greatly increased use of antibacterial treatment. In the far advanced cases every physician would use such treatment, and even in minimal infections only very few would use bed rest without antibacterial treatment. As compared with 1948, artificial pneumothorax showed a remarkable diminution in popularity, while pneumoperitoneum showed a corresponding increase. Dr. Trimble does not state how often the physicians whom he questioned would combine phrenic nerve paralysis with pneumoperitoneum. Dr. Livingstone states that he regards pneumoperitoneum as an adjunct to phrenic paralysis, and that he has never used pneumoperitoneum without phrenic paralysis. This seems to be the logical consequence of the view that collapse therapy must be selective if it is to be effective.

Among the American physicians there has been an increase in the proportion of patients for whom surgical treatment would be advised; and resection has become far more popular than thoracoplasty. Some of the recommendations for resection are surprising; for instance, a few physicians stated that they would advise resection in a case of bilateral acute pulmonary tuberculosis rather more extensive on the left side. Dr. Livingstone makes a useful distinction between resection performed as direct therapy, removing diseased and usually functionless portions of lung which have caused symptoms, and resection performed prophylactically, in which damaged lung not known to have caused symptoms is removed on the ground that it is a potential source of danger at a later date. He adds that in some countries resection after a long course of antibacterial therapy has become the accepted form of treatment. The justification for "prophylactic" resection depends upon the view that residual encapsulated caseous foci

[1] *Thorax*, 1950, **5**, 248.
[2] American Trudeau Society, *Amer. Rev. Tuberc.*, 1953, **68**, 477.
[3] Goodwin, R. A., *Ann. intern. Med.*, 1954, **41**, 328.
[4] Foster-Carter, A. F., *et al.*, *Brompton Hosp. Rep.*, 1952, **21**, 1.

are dangerous; but no agreed opinion about how dangerous they are has yet been reached.[2]

One of the most remarkable changes which has occurred since the advent of antibacterial treatment has been the great diminution in the popularity of artificial pneumothorax. Some physicians have ceased to use this form of collapse therapy.[3] Dr. Livingstone believes that there are still some indications for artificial pneumothorax, and points out that the figures derived from the Frimley follow-up of 1,153 cases, each for a minimum period of eight years, show that even before antibacterial drugs were available a pneumothorax which resulted in closure of the cavity improved the prognosis.[4] The real drawback of artificial pneumothorax treatment was the high incidence of pleural complications. There is, however, reason to believe that the combination of antibacterial drugs with artificial pneumothorax will result in a lower incidence of such complications. No comparably extensive series of cases treated with artificial pneumothorax since the advent of antibacterial drugs has yet been studied. It is to be hoped that Dr. Livingstone and others who continue to use artificial pneumothorax in selected cases will publish their results in due course. It is difficult to believe that a method of treatment which was so widely and successfully used for so long by so many physicians can really have no useful part to play in the future.

In pulmonary tuberculosis to-day the multiplicity of possible therapeutic measures in several fundamentally different categories tends to cause confusion, and the formal assessment of all possible combinations of them is not feasible. But the disease presents such a variety of anatomical and immunological features that it would be surprising if procedures which have proved successful in the past were not found still to be useful in selected cases in combination with antibacterial treatment. In the more usual types of case the physician may hope eventually to have precise data indicating the superiority of one of the possible lines of treatment: in those not falling into a category which has been statistically investigated he will continue to have the responsibility of exercising judgment based upon experience.

HEPATIC FIBROSIS

The idea that nutritional deficiency is of great importance in the causation of liver disease springs mainly from the results of animal experiments performed in the past 15 years.[1 2] These experimental results seemed at first to show why human liver disease is more prevalent in Africa, Asia, and other countries where the standard of nutrition is well below that of Western Europe and the U.S.A. The fatty liver of kwashiorkor in Uganda[3] and of the "fatty liver disease in infants in the British West Indies"[4] were strikingly similar to the fatty livers so readily produced in rats by dietary means and which so consistently caused cirrhosis if maintained for long enough. The failure, however, of methionine or choline to mobilize the fat from the livers of affected children, and the difference in the distribution of the lesions in the human liver from that in the experimental animal, suggested from the first that the direct application of the experimental results to man was altogether too simple. The recent observations of J. H. Walters and J. C. Waterlow[5] on the incidence of hepatic disease in West African children give prominence again to these difficulties, but also help to dispel them.

The clinical material which formed the basis of this study in the Gambia consisted of four groups of children and adolescents up to 20 years of age—a control group of 15, a group of 17 patients with symptomless hepatomegaly, a group of 26 malnourished infants, and a group of 21 children with hepatomegaly associated with oedema and ascites. All cases were studied as hospital in-patients, and the investigations included one or more needle biopsies of the liver in every case. The fibrosis in these biopsy specimens was classified, in increasing order of severity, as normal, periportal quiescent, periportal active, and diffuse. The incidence and severity of the fibrosis in the children with symptomless hepatomegaly were about the same as in the control groups —namely, 50%—and almost entirely of the periportal quiescent type. Walters and Waterlow concluded from this that the hepatomegaly in these children could not be regarded as a precirrhotic state. In the group of malnourished infants, however, periportal fibrosis of an active type associated with cellular infiltration was the characteristic lesion, and present in most cases. In the patients with hepatomegaly and ascites or oedema the severest forms of fibrosis were most frequently found.

Having obtained a rough indication of the type and incidence of hepatic fibrosis in the community, the authors, in an attempt to throw light on the aetiology, directed their attention to the two outstanding environmental factors—namely, nutrition and parasitic infestation. What they reveal is both grim and startling. Owing to the inadequacy of the local

[1] György, P., and Goldblatt, H., *J. exp. Med.*, 1939, **70**, 185.
[2] Himsworth, H. P., and Glynn, L. E., *Clin. Sci.*, 1944, **5**, 93.
[3] Trowell, H. C., and Muwazi, E. M. K., *Arch. Dis. Childh.*, 1945, **20**, 110.
[4] Waterlow, J. C., *Spec. Rep. Ser. med. Res. Coun. (Lond.)*, 1948, No. 263, H.M.S.O.
[5] Walters, J. H., and Waterlow, J. C., ibid., 1954, No. 285, H.M.S.O.
[6] McGregor, I. A., and Smith, D. A., *Trans. roy. Soc. Trop. Med. Hyg.*, 1952, **46**, 403.
[7] Gillman, J., *et al.*, *S. Afr. J. med. Sci.*, 1949, **14**, 21.
[8] —— and Gillman, T., *Perspectives in Human Malnutrition*, 1951, New York.