staff do sometimes contract the disease. Renal dialysis came into it because severe infectious hepatitis attacked three members of the staff at about the same time—a surgical registrar, a male nurse, and a female staff nurse ; and the staff nurse died. Investigations carried out by the hospital's Control of Infection Officer showed that the only link between these staff members and a possible source of infection was a patient who had been admitted to the dialysis unit for the treatment of renal failure and who had mild infectious hepatitis ; the two nurses had attended this patient, and the surgeon had operated to drain a pericardial effusion. Later two technicians employed in the biochemical laboratories of the dialysis unit who had handled material from this particular patient also developed infectious hepatitis, but fortunately both recovered. In the meantime two further patients admitted to the renal dialysis unit for treatment developed hepatitis, which was fatal in one of them. A doctor and a staff nurse who had attended these patients also developed the disease, but again, fortunately, both recovered. Finally, a patient who was attending for repeated haemodialysis contracted the infection at a later date, and it is possible that he infected another patient who was also having dialysis in an adjacent bed and one of the doctors who was in attendance ; the doctor's infection was modified by prophylactic gamma-globulin that he had received as a precaution.

Investigation of this sort of infection is hampered by the absence of any certain means of isolating the virus or of detecting infection by the presence of appropriate antibodies in the blood. Nevertheless, the evidence for the spread of infectious hepatitis from an original source provided by the patients undergoing renal dialysis is strongly suggestive. Exposure to contamination with blood or faecal material is the most likely cause. The techniques employed are now being urgently examined at Manchester so that this sort of contamination can be reduced to an absolute minimum. Since human gamma-globulin is considered to provide some protection,[2] prophylactic injections were given to all members of the staff who had been in contact with the affected patients and to everyone who had been in contact with the affected staff. The Infirmary has also asked the local health authorities to put infectious hepatitis on the list of notifiable diseases, presumably in order to have advance notice if the disease is more than usually prevalent in the district. We must hope that these measures will be effective, because haemodialysis is too useful a treatment, especially for acute renal failure, to be given up, and Professor D. A. K. Black and his team have rightly decided to continue using the artificial kidney.

Unusual Mediastinal Tumour

The discovery of a mass of enlarged mediastinal lymph nodes together with serious anaemia in a child usually means that either a leukaemia or a reticulosis is the cause. But recently S. L. Lee and colleagues,[1] in New York, have described an odd case of this combination which appeared to be due to an infection. Enlargement of mediastinal lymph nodes, occurring as the sole manifestation of disease, may be hyperplastic rather than neoplastic in origin, and B. Castleman, L. Iverson, and P. Menendez[2] described a series of 13 such cases in 1956. The characteristic histological changes in these nodes were irregular formation of germinal centres and proliferation of capillary endothelium, changes which were interpreted as a response to infection. Some 30 similar cases have been reported in the literature since, but the responsible infecting agent has rarely been identified, and in none was there any associated anaemia.

The patient recorded by S. L. Lee and his colleagues was an 8-year-old boy of Italian extraction who had been known to have anaemia for three years ; the haemoglobin levels were between 6 and 8 g. per 100 ml., and the anaemia, though consistently of microcytic type, had failed to respond to oral or parenteral iron, and addition of pyridoxine and folic acid made no difference. The white-cell count was normal ; none of the inherited red-cell abnormalities were found ; there was no evidence of any undue haemolysis or of renal failure ; the marrow smears showed active erythroblasts as expected, and there was a marked increase in stainable iron ; plasma cells were somewhat more numerous than usual. The plasma iron was low at 13 μg. per 100 ml., and the unbound iron-binding capacity was rather low. An absorption test with oral ferrous sulphate showed hardly any absorption of iron, but iron given intramuscularly increased the amount in the plasma and saturated its iron-binding capacity. Investigation of serum proteins showed an increase of γ-globulin. Radiograms of the chest revealed the presence of a large mass in the upper mediastinum, presumably due to enlarged lymph nodes ; palpable but not very large lymph nodes were found in the left axilla and the groin, and the spleen was enlarged to 2 cm. below the costal margin.

A thoracotomy was carried out and an encapsulated mass found in the left anterior-superior mediastinum ; there were also many enlarged separate lymph nodes extending posteriorly and a normal thymus was seen immediately adjacent to the tumour superiorly. The encapsulated mass, which weighed 70 g., and several lymph nodes were removed. The patient made a smooth recovery ; he had been transfused before the operation, but afterwards the haemoglobin level remained raised and the anaemia did not recur ; the serum iron also rose to normal and the hypergammaglobulinaemia diminished. When seen 15 months after the operation the child was well, with no anaemia and no evidence of enlarged lymph nodes.

The histological sections of the removed mediastinal mass and lymph nodes showed numerous follicles irregularly arranged with a " cuff " of compressed lymphocytes surrounding them. Cultures were made from the removed tissues but no infective agent, bacterial or fungal, was found. Lee and his colleagues conclude that this is another case of " infective " mediastinal tumour but admit that it is difficult to fit the severe anaemia into a picture of solely chronic infection. They undertook various investigations to try to find an explanation but no clue was discovered.

Cases like this are undoubtedly rare. But the occurrence of an irregular follicle-like hyperplasia of lymph nodes is known to occur in some chronic infections, and the distinction of such a picture from that due to a reticulosis, such as the Brill-Symmers reticulosis, can be difficult. H. Rappaport, W. J. Winter, and E. B. Hicks[3] described in detail the reactive follicular hyperplasia that occurred in the lymph nodes of some patients with rheumatoid arthritis and listed the points of difference in architectural and cytological changes between this reactive hyperplasia and those caused by a true follicular

[1] Lee, S. L., Rosner, F., Rivero, I., Feldman, F., and Hurwitz, A., *New Engl. J. Med.*, 1965, **272**, 761.
[2] Castleman, B., Iverson, L., and Menendez, V. P., *Cancer*, 1956, **9**, 822.
[3] Rappaport, H., Winter, W. J., and Hicks, E. B., ibid., 1956, **9**, 792.

lymphoma, or Brill-Symmers syndrome. They emphasized that only consideration of several features could enable the distinction to be made, and they noted as well that the reactive hyperplasia tended to be localized, whereas the lymphoma tended to be generalized. Therapeutically the enlarged masses of lymph nodes produced by follicular lymphoma respond well to radiotherapy or to chemotherapy, and such treatment will also reduce nodes later found to be non-neoplastic. To-day, when thoracotomy can be undertaken in centres with proper modern facilities, the risk of operative removal of such a mediastinal mass as occurred in the case reported here may well be worth while ; but if physicians elsewhere meet such a case treatment with radiotherapy or even chemotherapy might be adequate.

Thymectomy and Myasthenia Gravis

The first well-documented association of a thymic tumour with myasthenia gravis was reported in 1901 by L. Loquer and C. Weigert,[1] but H. R. Viets and R. S. Schwab[2] state that two years before this Oppenheim had mentioned the association in a paper in which he showed that there were no pathological changes in the nervous system in myasthenia gravis. The first thymectomy for myasthenia was performed by Sauerbruch in 1911[3] on a patient who also suffered from thyrotoxicosis. Some improvement in the myasthenia was noted. In 1937[4 5] the same surgeon operated on two myasthenic patients who had thymic tumours, but both patients died of mediastinitis.

But it was A. Blalock[6] in 1936 who first showed the value of thymectomy in the treatment of myasthenia. As well as operating on patients with thymic tumours he also removed the organ from patients without a tumour. In 1942 Sir Geoffrey Keynes[7] performed the first thymectomy for myasthenia in Great Britain, and it is as a result of his work on the subject that the value of the operation in selected cases of myasthenia has been established. From an early stage he emphasized the importance of considering separately patients with and without a tumour when assessing the results of operation. Tumours of the thymus are present in about 15% of myasthenic patients,[8] and with careful radiological techniques[9] if a tumour is present it can usually be seen.

In 1958 J. A. Simpson[10 11] surveyed Keynes's results in 294 operated patients and compared them with those obtained in 110 patients who had not been operated on. He found that fewer women died of myasthenia if their thymus had been removed than would be expected if they were treated with drugs alone. Moreover, thymectomy also increases the number of women very greatly improved ten years or more after the onset of the illness. In the smaller number of male patients similar trends were found, but the beneficial results of operation were not so clearly established. In general the best results were obtained with a younger than average age of onset, a shorter pre-operative duration of the disease, and a younger age at the time of operation. Simpson considered that a good result was more probable if myasthenia had been present for less than five years before operation, but there were some strikingly successful results in patients with longer histories. He found that the prognosis is poor if a thymoma is present but that pre-operative radiotherapy might be beneficial.

R. A. Henson, G. M. Stern, and V. C. Thompson[12] have recently reported their results from the London Hospital ; 36 operations were performed, six of which were for thymomas. Their indications for operation in cases without radiological evidence of a tumour were those now fairly generally accepted—first, patients under the age of 30 with a history of less than two years in whom symptoms were not adequately controlled by drug treatment ; and, secondly, a smaller group, irrespective of age of onset, with symptoms of five years' or less duration who were severely handicapped in spite of energetic medical treatment. Their results were most encouraging, "being entirely satisfactory in 70%." By this they mean that there had been complete remission of symptoms or that only minor symptoms controlled by a small dose of cholinergic drugs persisted. They stress, as have previous authors, the very gradual improvement which often takes place, and emphasize, as Keynes has done in the past, that thymectomy should not be carried out as an emergency in a myasthenic crisis. Two patients died after operation, but these deaths were early in the series before modern methods of dealing with respiratory failure were available. Two patients died later, one suddenly nine months after operation, and the other, who also had thyrotoxicosis, of respiratory failure six months after operation, having shown no post-operative improvement in the myasthenia.

The value of thymectomy in selected cases of myasthenia gravis is thus well established. When a thymoma cannot be shown radiologically, operation gives the best chance of relief of symptoms, or at any rate produces considerable improvement in patients under the age of about 45 in whom the disability is getting worse despite adequate medical treatment. The problem of patients in whom a thymoma is present is more difficult, and a study of a large series of cases is not yet available. Simpson's study of Sir Geoffrey Keynes's series suggests that deep *x*-ray therapy before removal of the tumour and thymus may give the best results.

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A Problem in Bacterial Endocarditis

Sensitivity to penicillin in a patient with bacterial endocarditis presents a difficult problem. The antibiotic or combination of them used in treating this disease must be fully bactericidal, or eventual relapse is almost certain. Bactericidal antibiotics other than penicillin are less effective against streptococci and more toxic. Vancomycin might be the best choice, but it is also difficult to administer. If penicillin must be given at all costs, there are three ways in which this can be made possible. One is desensitization, but this is uncertain, time-consuming, and hazardous. Another is to protect the patient with an

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