

sufficient to damage the brain. A fit man of 23 received manipulation for a minor neck injury from an osteopath. Two hours later he was dizzy and nauseated before collapsing. Headache followed and he became drowsy and comatose. Investigations suggested a brain stem lesion but he died in coma undiagnosed after 38 hours.

Necropsy revealed bilateral symmetrical cerebellar infarction but the vertebro-basilar arterial tree was healthy and patent. One vertebral artery was surrounded by a recent haematoma within its canal. Microscopy showed acute haemorrhagic cerebellar infarction and widespread anoxic ischaemic damage in the medulla and distal pons. Brain stem lesions were symmetrical and included generalized acute congestion and acute haemorrhagic infarction of the floor of the fourth ventricle. At the cellular level damage varied from acute neuronal swelling to ischaemic change and homogenizing change. Myelin sheaths were swollen and beaded.

This case demonstrates that injury to the neck may be followed by arterial spasm sufficiently severe and prolonged to result in fatal cerebral infarction. The potential danger of manipulative therapy to a healthy young subject is illustrated. The recognition of arterial spasm is of great importance in treating these cases.

Serial liver biopsies in hepatitis B antigen carriers

E. TAPP (*Department of Pathology, Withington Hospital, Manchester*) Initial liver biopsies from asymptomatic antigen-positive blood donors showed a range of histological appearances varying from minor parenchymal lesions to cirrhosis. Twenty of these individuals have now been followed up for periods of between two and four years and during that time have had at least one further liver biopsy.

The histological appearances of these biopsies will be described and it will be seen that while the one case which showed cirrhosis initially and one which showed chronic aggressive hepatitis initially now have less inflammatory cell activity in the liver, there are two cases of chronic aggressive hepatitis which appear to have progressed to cirrhosis and one which now shows increased inflammation of the liver. Further evidence of the progressive nature of the liver disease is seen in two cases which showed chronic persistent hepatitis initially and which now have evidence of aggressive hepatitis, and three cases which

showed only focal parenchymal lesions in the first biopsy and which now have the portal tract infiltrations of chronic persistent hepatitis.

Incidence of auto-immune thyroiditis

T. BIRD (*Department of Pathology, Newcastle General Hospital*) An area near Newcastle upon Tyne, whose adult population is closely matched for age, sex, and socioeconomic groups to the population of Great Britain, has been studied for the prevalence of subclinical hypothyroidism and its possible association with hyperlipidaemia and ischaemic heart disease. A random one-sixth of the population, 2779 adults, were seen in 1973-74. Antibodies to thyroglobulin and thyroid cytoplasm were present in 6.8% (2.7% of men and 10.3% of women). Serum thyroid stimulating hormone (TSH) was raised above 6m U/l in 5%, and 3.5% had both thyroid antibodies and raised TSH. Thus half of the people with antibodies were regarded as having evidence of subclinical hypothyroidism (Evered *et al*, 1973).

One thousand consecutive adults, 590 men and 410 women, coming to necropsy in Newcastle General Hospital in 1974 were specially examined for lymphocytic infiltration of the thyroid and for thyroid antibodies in postmortem blood. A preliminary study had shown that antibodies could be demonstrated *post mortem* and this was confirmed during the survey. The lymphocytic infiltration has been graded similarly to that of Williams and Doniach (1962). Minor degrees of infiltration with only occasional small foci were seen in 10.8% of men and 19.5% of women, with more severe grades in 2.7% of men and 14.8% of women. A close correlation was demonstrated between the degree of infiltration and the presence of antibodies. Of the men 2.7% and of women 13.4% had antibodies but only seven patients of 144 with minor infiltration had antibodies, while 62 out of 85 with more severe infiltration had antibodies.

These results help to confirm the suggested association between lymphocytic infiltration of the thyroid, usually demonstrated at necropsy, and the presence of thyroid antibodies, usually demonstrated in different groups of living patients.

References

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Karyotypic transformation of chronic granulocytic leukaemia

J. C. SHARP (*Department of Haematology, The Children's Hospital, Sheffield*) Karyotypic abnormalities, additional to the Ph¹, have been identified by banding in 16 consecutive cases of chronic granulocytic leukaemia (CGL) at transformation. Non-random changes—trisomy 8, abnormalities of a chromosome 17 and a second Ph¹—found either in association or singly occurred in 11 cases (approximately 70%). Four different abnormalities of chromosome 17 were found, namely, an isochromosome long arm 17, i (17q), in five cases and in one case each, a translocation product of long arm 17 and an 18, trisomy 17 and deletion of short arm 17, 17p-. A factor or factors operating at the centromere of a 17 may produce a break and isochromosome formation, translocation or deletion or instability and subsequent non-disjunction. In the remaining five cases, the abnormalities were non-recurring and considered random.

In 11 cases, acute transformation of the disease was recognized from standard haematological parameters at the same time as the additional chromosome abnormalities were found. In four the chromosome abnormalities preceded transformation by from one week to three months. One of these, characterized clinically only by sulphur resistance, had a karyotype of 59 chromosomes.

In two cases of focal transformation, both with parapareses caused by extradural deposits, the demonstration of additional chromosome abnormalities in the bone marrow and the blood suggested a systemic transformation: in neither case was there haematological evidence of this.

The finding of karyotypic abnormalities additional to the Ph¹ in a significant proportion of cells suggests that transformation is occurring. In some cases this may permit early recognition of the metamorphosis of the disease.

A laboratory study of the haemolysis caused by different blood pumps

O. H. B. GYDE AND B. R. HARRIS (*Department of Haematology, East Birmingham Hospital, Birmingham*) Peristaltic pumps cause little overt haemolysis when used to maintain patients on haemodialysis. Nonetheless the performance of some of the designs has been questioned together with