views, is particularly examined this condition will often remain undetected.

We wish to thank Mr. Lionel Gracey for access to the clinical notes and also the photographic department of the Royal Free Hospital for the illustration.

S. MINDEL, M.B., B.CH., D.M.R.D.,
LOUIS KREEL, M.D., M.R.C.P., F.F.R.,
Department of Radiology, Royal Free Hospital, London W.C.1.

REFERENCES

Bruck, R. N., and Caplan, B. (1964). *J. Amer. med. Ass.*, **189**, 326.
Culver, G. J., and Pirson, H. S. (1959). *Amer. J. Roentgenol.*, **82**, 1032.
Culver, G. J., Pirson, H. S., Milch, E., Berman, L., and Abrantes, F. J. (1961). *Radiology*, **76**, 785.
Gordon, S. S., and Hauser, D C. (1967). *Minn. Med.*, **50**, 1105.
Kreel, L. (1968). "Duodenography." In *Abdominal Operations*, 5th ed., edited by Rodney Maingot. New York.
Raia, S., and Kreel, L. (1966). *Gut*, **7**, 420.
Tobin, J. J., jun., Schlang, H. A., and James, D. R. (1966). *J. Amer. med Ass.*, **198**, 787.

Cytomegalovirus Disease Presenting as Hepatitis

Brit. med. J., 1968, 3, 786

Attention has recently been drawn to disease in adults attributed to cytomegalovirus infection. Adults shown to have rising titres of antibody to cytomegalovirus have presented as cases of seronegative infectious mononucleosis (Klemola and Kääriäinen, 1965 ; Anderson and Stern, 1966 ; Klemola *et al.*, 1967a), hepatitis with jaundice (Lamb and Stern, 1966 ; Toghill *et al.*, 1967), or polyneuritis or pericarditis (Ironside and Tobin, 1967 ; Klemola *et al.*, 1967b ; Räsänen and Saikku, 1967).

The following report is of an adult patient who presented with anicteric hepatitis with a relative lymphocytosis but absence of atypical mononuclear cells and in whom a high rise of titre to cytomegalovirus was demonstrated.

CASE REPORT

The patient, a 21-year-old man, was admitted to hospital on 7 February 1968. His illness began on 26 December 1967 with fever, nausea, vomiting, and abdominal pain ; it improved after three days, when he returned to work. Two weeks later he was again ill and off work for two days with mild fever, myalgia, and unproductive cough. He returned to work, but subsequently complained of increasing lethargy, intermittent headache, excessive sweating, and dark urine. His appetite was normal, but he had lost 6 lb. (2.7 kg.) in six weeks.

Examination revealed a thin young man with an intermittent fever ranging between 37° C. and 39° C. and with moderate generalized sweating. There was no significant lymphadenopathy or rash and he was anicteric. His liver was felt one fingerbreadth beneath the costal margin and was tender, but his spleen was not enlarged. There were no other abnormal physical findings.

Investigations.—Haemoglobin 13.7 g./100 ml. ; white blood cells 11,700/cu. mm. (polymorphs 6%, lymphocytes 82%, monocytes 8%, plasma cells 4% ; no abnormal mononuclear cells seen). Liver-function tests: total serum bilirubin <0.5 mg./100 ml., alkaline phosphatase 11 units, serum alanine aminotransferase 143 units, serum aspartate aminotransferase 100 units. Urinalysis: urobilin and urobilinogen present in excess. Denco-IM test negative. Widal, toxoplasma dye, and brucella complement-fixation tests negative. Blood culture negative ×3. Chest *x*-ray picture was normal, and screening showed normal diaphragmatic movements. Mantoux 1:100 negative. Cytomegalovirus complement fixing antibody titres: 14 February 2,048, 19 February 4,096 ; 6 March 1,024. Cytomegalovirus was isolated from one urine specimen.

After two weeks' bed rest as treatment he felt much improved, his fever and sweating had settled, and his liver was no longer palpable. His E.S.R., which was 11 mm./1 hour on admission, rose to 69 after 10 days but returned to 11 one month after admission.

When discharged home on 9 March his blood showed: Hb 13.6 g./100 ml., white blood cells 10,300/cu. mm. (polymorphs 53%, lymphocytes 42%, eosinophils 2%, monocytes 3%). His liver-function tests had returned to normal except for a serum alanine aminotransferase of 45 units.

COMMENT

The patient was admitted to hospital as a suspected case of infectious hepatitis because of the history of nausea, vomiting, headache, abdominal pain, and dark urine, and the clinical finding of an enlarged and tender liver. However, the prolonged fever made the diagnosis unlikely. The diagnosis of infectious mononucleosis was also entertained, but again the prolonged fever, the absence of exudative pharyngitis, the absence of atypical mononuclear cells in the blood, and the negative Denco-IM test made it unlikely. Acquired toxoplasmosis may also cause prolonged mild fever with hepatitis, but there is usually lymphadenopathy. The toxoplasma dye test was normal in this patient.

The accepted clinical picture of cytomegalovirus mononucleosis in adults is one of prolonged fever with the presence of atypical mononuclear cells in the blood and the absence of exudative pharyngitis and lymphadenopathy. Liver-function tests have been abnormal in all cases of acquired cytomegalovirus disease so far described.

In the present case atypical mononuclear cells were not seen on three occasions, and it is interesting to note that cytomegalovirus infection has been described in children with pronounced lymphocytosis but without atypical mononuclear cells in the blood (Hanshaw, 1966). This 21-year-old patient is younger than the majority of cases of adult cytomegalovirus so far described. In a recent study (Stern, 1968) most adult patients were found to be over 30 years of age.

In the above case the presence of a very high antibody titre to cytomegalovirus, together with a rise and fall of antibody levels and the isolation of the virus from the urine, indicated the presence of cytomegalovirus disease.

I should like to thank Dr. G. Donald W. McKendrick for permission to publish this case, and Dr. H. Stern for the virus studies.

A. R. CARTER, M.B., B.S.,
Senior House Officer,
Infectious Diseases Unit, St. Ann's General Hospital, London N.15.

REFERENCES

Anderson, J. P., and Stern, H. (1966). *Brit. med. J.*, **1**, 672.
Hanshaw, J. B. (1966). *Pediat. clin. N. Amer.*, **13**, 279.
Ironside, A. G., and Tobin, J. O'H. (1967). *Lancet*, **2**, 615.
Klemola, E., and Kääriäinen, L. (1965). *Brit. med. J.*, **2**, 1099.
Klemola, E., Kääriäinen, L., von Essen, R., Haltia, K., Koivuniemi, A., and von Bonsdorff, C.-H. (1967a). *Acta med. scand.*, **182**, 311.
Klemola, E., Weckman, N., Haltia, K., and Kääriäinen, L. (1967b). *Acta med. scand.*, **181**, 603.
Lamb, S. G., and Stern, H. (1966). *Lancet*, **2**, 1003.
Räsänen, V., and Saikku, P. (1967). *Lancet*, **2**, 772.
Stern, H. (1968). *Brit. med. J.*, **1**, 665.
Toghill, P. J., Bailey, M. E., Williams, R., Zeegen, R., and Brown, R. (1967). *Lancet*, **1**, 1351.