1967). Lee (1967) found, in 60 to 70% of 24 patients transfused with hydroxyethyl starch, gross abnormalities in the partial thromboplastin time, which is a useful screening for the first stage of coagulation. It is possible that the abnormal bleeding notice in this trial was due to the hydroxyethyl starch, though the bleeding-time and clotting-time during and after infusion were normal. There is therefore need for further investigation of the first stage of coagulation and prothrombin generation in patients being transfused with this substance.

REFERENCES

- Ballinger, W. F., Solanke, T. F., and Thompson, W. L. (1966). *Surg. Gynec. Obstet.*, 122, 33.
- Garzon, A. (1967). *Proceedings of the Symposium on Hydroxyethyl Starch*, 3 April 1967, at Johns Hopkins Hospital, p. 9. Glendale, California.
- Hardisty, R. M., Ingram, G. I. C., and Sharp, A. A. (1964). *The Laboratory Investigation and Control of the Defibrination Syndrome*. Association of Clinical Pathologists Broadsheet No. 48. London.
- Lee, W. (1967). *Proceedings of the Symposium on Hydroxyethyl Starch*, 3 April 1967, at Johns Hopkins Hospital, p. 9. Glendale, California.

Medical Memoranda

Duodenal Haematoma

Brit. med. J., 1968, 3, 785-786

With the increasing awareness that intramural haematoma of the duodenum is a definite clinical and radiological entity it is possible to make a diagnosis of this condition with reasonable certainty on the barium-meal examination. Because road accidents are especially likely to result in upper abdominal injuries through impaction with the steering column (Bruck and Caplan, 1964), this condition will be seen with increasing frequency. Also the use of the Ross biopsy capsule for obtaining specimens of the duodenal mucosa (Tobin *et al.*, 1966) and treatment with anticoagulants (Culver *et al.*, 1961) have added to the incidence of the condition, which may also occur spontaneously in haemorrhagic diatheses (Culver and Pirson, 1959).

CASE REPORT

A 55-year-old woman was admitted to hospital on 18 November 1966 after being injured in a car accident the previous day, when she had been thrown forward against the windscreen and the steering column. She vomited later that day and again the next morning.

On admission she was alert and co-operative, complaining of pain in the chest and also of headache. There was tenderness and bruising over the sternum, but no other physical signs. Investigations showed Hb 14.9 g./100 ml., intravenous pyelogram normal, cholecystogram normal. The patient improved and three days later was discharged. She remained well for two days, but on the third day after discharge vomiting recurred. The food seemed to stick in the epigastrium, producing a nauseated feeling. On readmission on 1 December she looked well, her B.P. was 120/80, pulse 50, Hb 15.3 g./100 ml., W.B.C. 6,500/cu. mm. There was tenderness in the epigastrium, but no other physical signs were present, and her stools were normal.

Barium-meal examination showed a moderate-sized reducible hiatus hernia. The stomach was otherwise normal. There was delay in propulsion of the barium in the region of the third part of the duodenum with marked churning movements in the second part. Just beyond this, in the third part of the duodenum, there was an area of concentric narrowing with marked irregular margins (see Fig.). The duodenum proximal to the area of narrowing showed widening with accentuation of the transverse folds. The mucosal pattern in the narrowed area was coarse and markedly irregular. The appearances were very similar to previous published illustrations (Tobin *et al.*, 1966; Gordon and Hauser, 1967), and haematoma of the third part of the duodenum was therefore diagnosed.

The patient was treated conservatively, and after two weeks was discharged completely asymptomatic. Double contrast duodenography (Raia and Kreel, 1966; Kreel, 1968) was performed one

month later, when the duodenum was shown to be normal. She has since remained asymptomatic, and has had no recurrence of the vomiting.

Spot film of third part of duodenum showing the concentric narrowing with marked proximal dilatation of the second part of the duodenum. DB=Duodenal bulb. 3=Third part of duodenum. J=Jejunum.

COMMENT

Early radiological diagnosis of intramural haematoma of the duodenum obviates the necessity for an exploratory laparotomy. If the possibility of this condition is entertained in the differential diagnosis of the "acute abdomen" and there is no evidence of perforation of the bowel, the demonstration in a barium study of the pattern associated with an intramural extramucosal mass will establish the finding. It is, however, most important in cases of upper abdominal trauma, or in those on anticoagulants who present with vomiting, to demonstrate the whole of the duodenum, including the third part. Unless this part of the duodenum, which is usually hidden by the barium in the stomach in the frontal or slightly oblique

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.

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Cytomegalovirus Disease Presenting as Hepatitis

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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 (Ironsides 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 $\times 3$. 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.
- 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.

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.

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REFERENCES

- Anderson, J. P., and Stern, H. (1966). *Brit. med. J.*, **1**, 672.
Hanshaw, J. B. (1966). *Pediat. clin. N. Amer.*, **13**, 279.
Ironsides, 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.