not usually accompanied by evidence of malabsorption (Conn & Quintiliani 1966). Hæmatological abnormalities are found in 50% of cases of thymoma but selective neutropenia without anæmia has not been described (Rogers *et al.* 1968). The absence of improvement in immunoglobulin levels following thymectomy is expected (Peterson *et al.* 1966) and this will probably be the limiting factor in prognosis.

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Dr G L Asherson and Dr A D B Webster (*Division of Immunology, Clinical Research Centre, Watford Road, Harrow, Middlesex*) noted that this patient showed depressed immunoglobulin levels, affecting IgG (370 mg/100 ml), IgA (30 mg/100 ml) and IgM (5 mg/100 ml). She also had depressed ability to make antibodies. The anti-A and anti-B titres were only 1:2 and 1:1 and she gave no response (titres less than 1:20) 3 weeks after immunization with TAB, and only a poor response at 6 weeks. (Titres < 1:20 for O and H antigen of *S. typhi*; O antigen – *S. paratyphi* A and B 1:20, S. *paratyphi* C – 1:40; H antigen – *S. paratyphi* A and B < 1:20, C 1:20.) As usual with patients having low but detectable levels of immunoglobulins, a normal percentage of her lymphocytes had immunoglobulin on their surface as measured by autoradiography after treatment with I^{125}-labelled anti-serum prepared against and eluted from human IgG.

In contrast to the depression of humoral immunity there was little evidence of depressed cell-mediated immunity. Blast transformation measured by incorporation of ^{14}C thymidine at 3 days was 50 times background, which was well within the normal range. She gave a positive 24-hour reaction to candida, and a positive reaction to 0·4% dinitrochlorbenzene 7 days after sensitization. However, the Mantoux reaction (100 units PPD) was negative. Her lymphocytes after labelling with chromium showed a slightly depressed arrival at mouse lymph nodes which was provisionally taken as an index that cells homing to lymph nodes were not absent. Her lymphocytes showed a high but probably normal ability to kill chicken red cells spontaneously, in the presence of phytohæmagglutinin and when the target cells were coated with antibody. The antinuclear factor test was positive at a dilution of 1/10.

This patient presented the paradox that a thymic tumour had apparently led to depressed antibody production with normal cell-mediated immunity despite the fact that in mice the main effect of thymectomy was to depress delayed hypersensitivity rather than antibody production. It was interesting that this patient had antibodies against nuclei, as reported in other cases of thymoma (Glyn L E & Holborow E J, 1965, Autoimmunity and Disease. Oxford; p 101), and it was possible that an autoimmune reaction directed against certain classes of immune cells was responsible for her immune deficiency state. The evidence that the thymus was required for the induction and possibly the maintenance of immunological tolerance was reviewed recently by Allison A C, Denman A M & Barnes R D, 1971, *Lancet* ii, 135.

Dr J H Baron (*Hammersmith Hospital, London W12*) asked whether the diarrhœa could have been related to changes in gastric, pancreatic or intestinal secretions induced by one or more hormones produced by the thymoma.

Dr Mallinson replied that no such measurements were made.

Knotting of the Small Intestine

D J Cowley ChM FRCS and F Iweze FRCS
(for J Spencer FRCS)
(*Royal Postgraduate Medical School, London W12*)

Woman, aged 25. Nigerian

History: Admitted on 10.2.71 as an emergency after waking at 2 a.m. with acute, unrelievable abdominal pain accompanied by vomiting. She had worked in London as a secretary for six years. She had been in excellent health and had had no previous abdominal operations. A normal period was in progress.

On examination: In severe pain. Pulse 60/min, blood pressure 150/90 mmHg. Some epigastric tenderness. Bowel sounds normal, no evidence of peritonitis.

Initially she was treated conservatively. During the next few hours she passed some flatus but developed increasing abdominal distension and tenderness accompanied by a rising pulse rate.

Abdominal X-rays showed a gas-filled loop in the left upper quadrant. Laparotomy was advised, with the provisional diagnosis of strangulation obstruction.

At operation: Several feet of mid-small-bowel were gangrenous and apparently twisted around a narrow pedicle. It was impossible to untwist it, so the bowel was divided proximally and distally to the gangrenous portion and decompression attempted via an enterotomy. Only half of the gangrenous bowel was deflated so a second enterotomy was made and the remainder decompressed. It was then possible to unravel the gangrenous bowel in the manner of untying a half-hitch. Clamps were applied and the gangrenous bowel, which measured 150 cm, was resected. Postoperative recovery was uneventful and three months later the patient had no complaints.

Comment

This was an instance of intestinal knotting, a subject reviewed recently by Shepherd (1967). Only two previous cases have been reported in Great Britain, but the condition is relatively common in some parts of Africa and in NE Europe, notably Finland. Shepherd (1967) reviewed 92 cases seen in one hospital in Uganda during 15 years and Kallio (1932) reviewed 157 North European cases of which 122 were from Finland. Knots most frequently form between a loop of ileum and the sigmoid colon (ileosigmoid knotting). Knotting between two loops of ileum (ileo-ileal) as in the present patient is rare. It was found in 13% of Kallio's patients and 1% of Shepherd's. The mechanism of knotting has been described well by Faltin (1937) and Davey (1968). Fig 1 shows how a knot becomes tied between

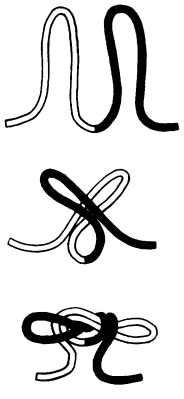

Fig 1 *Simplified diagram showing how two adjacent loops of ileum may become knotted together*

two adjacent bowel loops. The etiology of knotting is unknown; it is most common in areas where the diet is bulky and there is a high fibre content. Shepherd suggested that knot formation may be associated with excessive motility of the ileum. The mortality rate is approximately 50%. The operative procedure of choice in dealing with ileo-ileal knots is to decompress both loops, untie the knot and resect. With ileosigmoid knots the ileum should be cut and unwound from the sigmoid.

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Shepherd J J (1967) *Brit. J. Surg.* **54**, 561

Mr Spencer commented that he had seen several patients with this condition during a three-year period in Uganda, and had operated personally on two. All had been examples of ileosigmoid knotting, though at that time they were considered to be examples of double volvulus. The appearances at laparotomy in such cases were very bewildering, the mechanisms involved becoming clearer in retrospect. In East Africa knotting and volvulus occurred more commonly in those tribes who subsisted largely on a plantain diet; this association was less clear for other bowel obstructions peculiar to African adults, such as intussusception.

Mr J B Pearson (*Ilford and Barking*) said that in Nigeria there was a seasonal variation in the incidence of adult idiopathic intussusception. One suggested cause of this was the change in 5-HT content of the diet that occurred with the rainy season. 5-hydroxytryptamine impinging on the cæcal wall opposite the ileocæcal valve was thought to produce local smooth muscle contraction and consequent typical cæcocolic intussusception. As 5-HT had been suggested as an agent in the causation of intestinal knotting, he wondered whether any seasonal variation of incidence had been noted.

Coronary Heart Disease Treated and Untreated by Venous Grafts

Charles S Smithen MD[1] & Michael Petch MRCP
(*Guy's Hospital, London SE1*)
and Richard Sutton MRCP
& Alastair McDonald MRCP
(*National Heart Hospital, London W1*)
(for Donald Ross FRCS, G Edgar Sowton MD
and Lawson McDonald MD)

Case 1 (Dr Smithen & Dr Petch)
Mr J Y, aged 40

History: He first developed angina of effort twelve years earlier and had three previous myocardial infarctions, in 1964, in June 1970, and in October 1970. At the time of initial assessment for surgery he was severely limited by angina, which

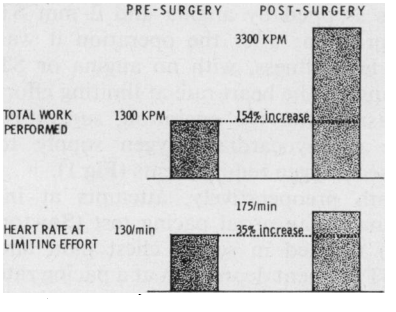

Fig 1 Case 1 *Exercise tolerance and heart rate at limiting effort before operation and three months after operation*

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