

BLIND LOOP SYNDROME — EXTENSIVE DIVERTICULOSIS OF THE SMALL INTESTINE

L. CUTAJAR

M.D., F.R.C.S. (Eng.), F.R.C.S. (Edin.)

*Department of Surgery,
St. Luke's Hospital*

Mr. C.T., aged 53 years, presented himself at Surgical Out Patients on 1.8.73 with a history of progressive weight loss and ill-health over the past three years. Despite a reasonably good appetite the weight loss and asthenia had been more marked in the past six months. During the past fortnight he had developed anorexia, diarrhoea (approximately two watery stools daily) and occasional hypogastric pain. He had vomited three times but there was no haematemesis. However, on five occasions, during the past three years, he had passed stools strongly suggestive of melaena. There was nothing else relevant in the past medical history. He smoked thirty cigarettes per day.

On examination, the most salient feature was the marked asthenia and pallor of the patient. There was no peripheral oedema. The cardio-vascular and respiratory systems were normal. There was nothing obviously abnormal to be seen or felt in the abdomen and in the rectum.

The patient was admitted to hospital where the following investigations were done:

Hb. 11.8 (80%). W.B.C. 17,400 per c.mm (neutrophils 76%, eosinophils 1%, basophils 1%, Lymphocytes 15%, monocytes 7%).

The blood film showed neutrophilia with normal R.B.C.s and platelets.

E.S.R. 110 mm in the first hour.

Urinalysis within normal limits.

Blood urea 26mg.‰.

No occult blood present in the stools.

Examination for agglutinins negative to *Salmonella* and *Brucella*.

Total serum proteins 6.5 gm. Serum albumen 2.7gm. The electrophoretogram showed marked reduction in albumen with increase in α_1 and α_2 and a slight relative increase in γ -globulins.

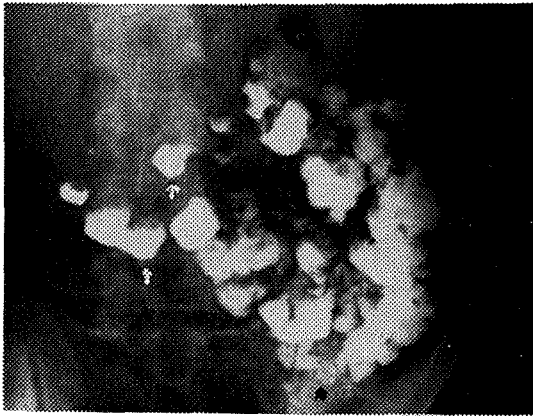


Figure 1

Diverticula of the small bowel with fluid levels.

X-ray of the chest showed the heart to be normal with no evidence of active lung disease.

Barium meal and follow through: "no lesion seen in the oesophagus, stomach or duodenum. The follow through examination shows a picture of malabsorption in the small intestine. There are some fluid levels probably due to mild ileus".

The clinical course was progressively downwards, the patient becoming weaker and more emaciated. At this stage the clinical impression was that the patient was suffering from intra-abdominal malignancy, most likely carcinoma of the pancreas.

On 17.8.73 he developed deep vein thrombosis in the left lower limb for which he was treated with heparin and Warfarin. When this improved it was decided to proceed to a laparotomy.

On 30.8.73 the writer carried out a laparotomy under general anaesthesia. On opening the peritoneal cavity the abdominal contents, including the liver, were

found to be enveloped in a continuous (probably congenital) fibrous sheath. In addition, the small bowel was closely adherent so that the loops could only be separated from each other with difficulty thus making detailed examination of the whole of the small bowel virtually impossible. When the proximal one third of the small bowel was gradually unravelled it was seen to contain multiple diverticula of various sizes, all situated on the mesenteric border. Some of the bigger diverticula had a larger circumference than that of the small bowel itself. There was hardly any length of bowel which was free but one area, about 8 in. away from the duodeno-jejunal flexure, was particularly involved. This bit was resected and the abdomen was closed in layers.

Post-operatively, the patient was treated with intra-venous fluids, including aminosol, and neomycin. However, his condition gradually deteriorated. On 8.9.73 he developed pulmonary oedema and a faecal fistula (with discharge of fluid faeces from the wound). He succumbed the next day.

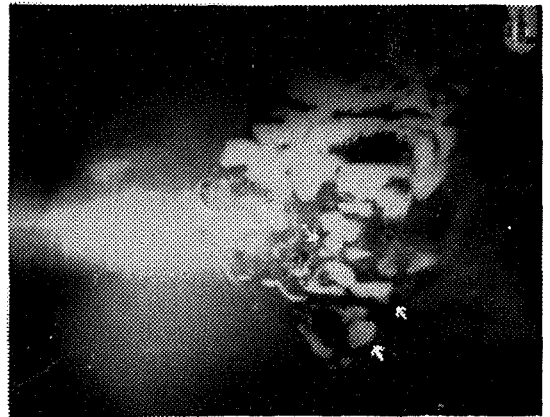


Figure 2

Lateral view of same.

The histology report was "diverticula of small intestine".

Comment.

The present case illustrates an unusual condition of malabsorption due to multiple diverticula of the small intestine. The condition corresponds to the syn-

drome which develops in association with a blind loop of the intestine.

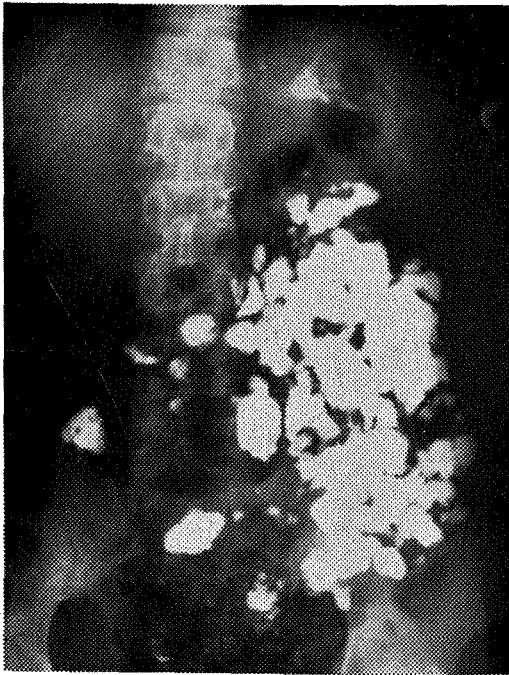


Figure 3
Flocculation of barium in small intestine suggestive of malabsorption.

Diverticula of the small intestine, other than Meckel's diverticulum, may be single and these are usually congenital in origin, or multiple and usually develop in later life. The solitary congenital ones are usually found on the anti-mesenteric border of the gut whereas the more common acquired diverticula are found in proximity to the mesenteric attachment. The duodeno-jejunal junction is the most common site for a diverticulum to be found at. They are more common in the upper part of the small intestine than in the ileum.

The incidence of diverticulosis of the small intestine has been variously reported to range from 0.57% (Edwards, 1936) by post-mortem studies to 1.25% (Cooke *et al.* 1963) by X-ray studies.

In 60% of cases the diverticula are discovered accidentally by radiological examination or laparotomy, and there are no symptoms which can be attributed to them, but in the remaining cases they

may give rise to genuine, and sometimes disabling, abdominal and other symptoms, as in the present case.

In a proportion of cases there are mild dyspeptic symptoms and wind discomfort, borborygmi and a bloated sensation which tends to come on some hours after food. Vomiting can be a troublesome feature of multiple diverticula. Intermittent attacks of diarrhoea may occur or the patient may present with continuing diarrhoea, steatorrhoea and macrocytic anaemia associated with the "malabsorption syndrome" (Badenoch *et al.*, 1955, Irwin, 1965). Both the anaemia and the steatorrhoea are due to the abnormal bacterial activity in the small intestine due to the constant seeding of the intestine with bacteria from the stagnant diverticula. The bacteria compete with the body for the available vitamin B₁₂ and so lead to a macrocytic anaemia. The steatorrhoea is probably due to malabsorption of dietary fat either due to the lack of unsplit bile-salts (due to interference with bile-salt metabolism by the proliferating bacteria) (Hoffman, 1965) or to a direct toxic action of free bile-acids on the mucosal cells (Dawson *et al.*, 1960).

Advanced cases of malnutrition due to a blind loop effect are not often seen. The present case, however, did present in this way and had a fatal outcome.

Diagnosis of the diverticula of the small intestine depends mainly on barium studies. The features to look for are:

- (1) presence of diverticula (single or multiple);
- (2) flocculation of barium (suggestive of malabsorption);
- (3) presence of fluid levels in the diverticula.

Post-laparotomy review of the X-rays in the present case in fact revealed all these features (see Fig. 1,2,3).

Treatment is directed towards:

- (a) *Correction of Malnutrition:*
 - (1) High calorie, low fat diet;
 - (2) vitamin B₁₂, iron, folic acid, vitamin supplements.
- (b) *Symptomatic treatment* of diarrhoea and steatorrhoea. A low fat-free diet and codeine phosphate help.

(c) *Treatment of the primary cause:*

- (1) sterilisation of the intestine by antibiotics, e.g. neomycin reduces bacterial counts and abolishes steatorrhea.
- (2) Resection of small bowel may be necessary where multiple diverticula are present.

A short comment on the fatal outcome of this case is pertinent. Undoubtedly the marked debility and malnutrition of this patient was the most important factor. The faecal fistula which developed towards the end was almost certainly due to poor wound healing. If a pre-operative diagnosis of this benign condition had been made it is possible that a less pessimistic view might have been taken and a more vigorous attempt made to boost up the patient's general condition by intravenous alimentation before operation. The

present case is therefore presented in the hope that it may focus attention on the possibility of this presentation for future reference.

Acknowledgements:

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