

Intramural intestinal haemorrhage: a complication of anticoagulant therapy

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Summary

The history is presented of a patient on long term anti-coagulant therapy who developed signs of intestinal obstruction due to haematoma in the small bowel. The difficulties of diagnosis and management are considered, and relevant publications reviewed.

Introduction

It has been estimated that haemorrhage occurs in approximately one third of all patients receiving anticoagulant treatment. Although it is usually only a minor complication, 2% of hospital patients and 10% of ambulatory cases on long-term therapy will suffer a serious haemorrhage (Gilbert and Jorgenson, 1960). Patients who present with sudden acute abdominal pain, often with signs of mechanical obstruction, may provide a difficult problem in diagnosis and management.

Case report

A 67-year-old female with cardiac failure and mitral incompetence, had a Starr-Edwards mitral valve replacement. Postoperatively she was treated with long-term anticoagulants in order to prevent thrombus formation on the prosthesis. The prothrombin time was controlled satisfactorily with Warfarin 6 mg daily but 4 months later a routine investigation showed that the prothrombin time had increased beyond recordable limits. The dose of Warfarin was reduced to 4 mg daily but 1 week later the patient was re-admitted as an emergency with severe upper abdominal pain and vomiting. She was critically ill and in cardiac failure with auricular fibrillation. Her abdomen was distended and there was rebound tenderness with guarding maximal in the right iliac fossa. Investigations were: prothrombin time 44 sec; Hb 12.3 g%; WBC 15,300. Plain abdominal radiographs showed numerous fluid levels in dilated small and large bowel (Fig. 1). Some form of intra-abdominal haemorrhage was thought to be the most likely diagnosis but because of the severe right iliac fossa pain acute appendicitis could not be excluded and it was decided to perform a laparotomy. The prothrombin time was reversed

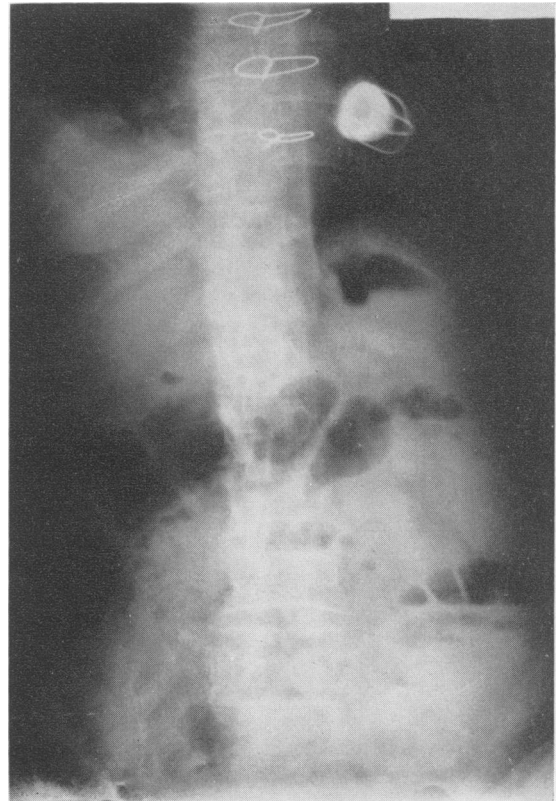


FIG. 1. Plain abdominal radiographs showing a Starr-Edwards mitral valve prosthesis and evidence of early small and large bowel obstruction.

with 10 mg intravenous vitamin K, and through a right paramedian incision the abdomen was explored. The peritoneal cavity contained 100 ml of blood and the small intestine was found to be moderately dilated down to a sharply demarcated purple, thickened 6 in long segment of terminal ileum. The adjacent mesentery was widened with haematoma but there was no evidence of mesenteric vessel occlusion. A similar, but less extensive lesion

was also noted in the ascending colon. In order to relieve the intestinal obstruction it was decided to resect the affected segment of small bowel but because of the patient's parlous condition the lesion in the colon was left. The specimen showed a severe occlusion of the lumen due to thickened wall (Fig. 2). Histological examination revealed extensive submucosal haemorrhage which had dissected the intestinal wall between the muscularis mucosae and muscle layers but the mucosal cells looked normal (Fig. 3).

The patient remained extremely ill for some days and, because of the risk of thrombus formation on

the prosthesis, intravenous heparin was given, the dose being adjusted to maintain a clotting time of 10 min. After a prolonged convalescence the patient was discharged on Warfarin 6 mg daily. She was re-admitted 1 month later with abdominal pain and vomiting, similar to the previous episode. The clinical and radiological signs were those of a small bowel obstruction, and the diagnosis of another intramural haemorrhage was made, although the prothrombin time was only 13 sec. The patient improved rapidly once anticoagulant therapy had been discontinued, and a barium meal and follow-through examination 1 week later showed a localized segment of ileum

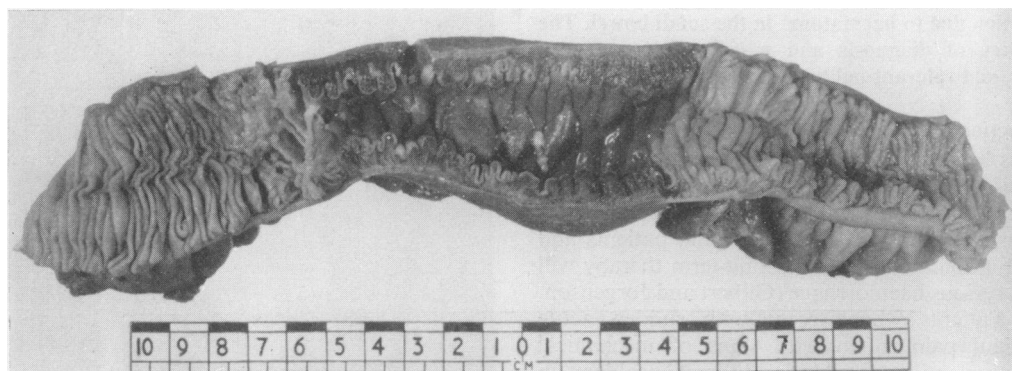


FIG. 2. Specimen of resected small bowel showing a thickened wall due to an intramural haemorrhage.

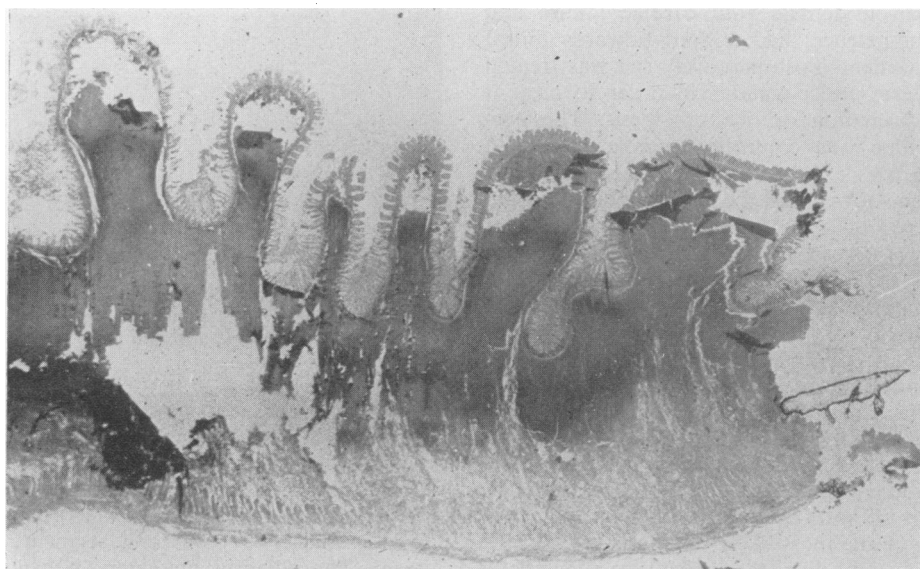


FIG. 3. Histological section of the specimen. Note: the dissection of intestinal wall by an extensive submucosal haemorrhage. The mucosa remains visible.

with irregular spiking mucosa, the 'picket fence' sign, diagnostic of an intramural haemorrhage (Fig. 4). Eventually she was discharged once more but it was decided, in view of these two episodes of bleeding, to risk discontinuing anticoagulant therapy. However, she was finally re-admitted 1 month later in coma with a Gram-negative septicaemia and died. A post-mortem examination showed total infarction of the colon, but no evidence of the jejunal submucosal haemorrhage.

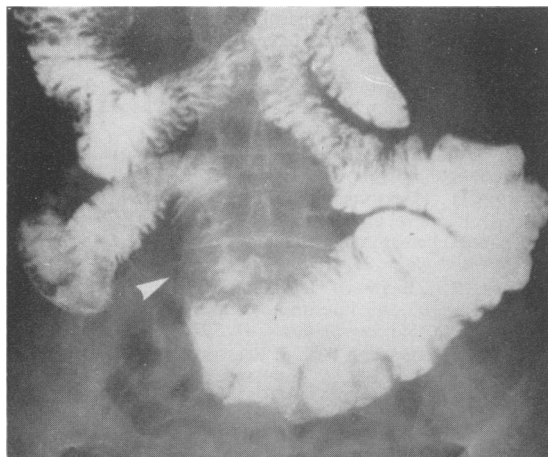


FIG. 4. Barium meal and follow-through examination showing the 'picket-fence' sign (arrow).

Discussion

Intestinal obstruction due to intramural haemorrhage is a rare but well recognized condition, usually affecting the duodenum and small bowel. The most common spontaneous cause is haemophilia (Khilnani *et al.*, 1964), and blunt abdominal trauma, particularly in children, may produce intramural bleeding of the duodenum (Spencer, Bateman and Horn, 1957; Caird and Ellis, 1958). Since Berman and Mainella (1952) first recorded a small bowel intramural haematoma secondary to anticoagulant therapy, there have been numerous similar reports. Herbert (1968) in an extensive review found eighty-six cases and added two more patients of his own.

Numerous radiological features of intramural haemorrhage have been described, and with prior knowledge of this condition a diagnosis is often possible on plain films. These may show multiple dilated loops of the small bowel with distorted mucosal folds, and careful inspection of the gas shadows occasionally reveals the 'thick bowel' sign emphasized by Sears *et al.* (1964), in which a narrow segment of bowel with irregular mucosa is seen. In more extreme cases of bleeding, complete obstruc-

tion can occur, and on plain radiographs the appearances of a 'pseudo-tumour' may be noted. In the severely ill patient, barium studies are not often feasible but typically show localized narrowing and rigidity of bowel segments with irregular blunted valvulae conniventes to produce the 'picket-fence' sign (Wiot, Weinstein and Felson, 1961). An unexplained feature of intramural haemorrhage well demonstrated by this case report, is the abrupt demarcation between the affected and normal intestine. Intestinal perforation at the site of the intramural haematoma has been reported (Raine, 1963).

The radiological findings combined with a clinical history of the gradual onset of cramping abdominal pain, distension and vomiting in a patient on anticoagulant treatment are usually sufficient to make a confident diagnosis. Other evidence of abnormal blood coagulation such as petechial haemorrhages, haematuria and melaena may also be present and the prothrombin time is usually, but not always, abnormally prolonged (Goldfarb, 1965). Bleeding is related to various factors, including stress, platelet adhesiveness and vessel reactivity, and may occur even when the prothrombin time is within the therapeutic range (Jaques, 1959).

The duodenum and jejunum are most commonly involved and multiple intramural haemorrhages may be present but involvement of colon is said to be rare (Gabriele and Conte, 1964).

Histologically, the haemorrhage dissects the bowel wall between muscularis mucosae and the muscle layers but, unlike mesenteric vascular occlusion, viability of the mucosa is preserved, as was demonstrated in the present case. Radiological and clinical follow-up studies in these patients have shown that intramural haemorrhage is a reversible phenomenon (Gabriele and Conte, 1964; Beamish and McCreath, 1961).

Provided a confident diagnosis can be made, conservative treatment is recommended (Herbert, 1968). Anticoagulant therapy should be discontinued, but reversal of a prolonged clotting time with intravenous vitamin K can be dangerous and lead to a sudden arterial thrombosis, especially of the cerebral and coronary vessels (Hafner *et al.*, 1962). Nasogastric aspiration and intravenous therapy with fresh blood, if necessary, are indicated. On this conservative regime the patient's condition will usually improve rapidly, but if after 2 days the signs and symptoms are no better then a laparotomy is essential to exclude other pathology. If at operation a localized intramural haematoma is discovered, it is advisable not to resect it but to close the abdomen and await resolution of the condition. In the present case it was decided to resect the affected small bowel because the haematoma was causing mechanical obstruction, and the patient was considered too ill to

await resolution of the haematoma. In addition, it had been decided to recommence anticoagulant treatment after operation in order to prevent thrombus formation on the mitral valve prosthesis.

The management of a sudden serious abdominal emergency in patients on anticoagulant treatment may tax the most experienced clinician, but an intra-abdominal or retroperitoneal haemorrhage should be considered to be the most likely diagnosis. Provided the patient's condition improves rapidly after discontinuing anticoagulant therapy, conservative management with intravenous fluids and nasogastric aspiration is advisable, but laparotomy is essential if another diagnosis cannot confidently be excluded. Careful examination of the gas shadows on plain abdominal X-rays may reveal the 'picket-fence' and 'thick-bowel' signs which are diagnostic of an intramural haemorrhage.

Acknowledgment

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References

- BEAMISH, R.E. & MCCREATH, N.D. (1961) Intestinal obstruction complicating anticoagulant therapy. *Lancet*, ii, 390.
- BERMAN, H. & MAINELLA, F.S. (1952) Toxic results of anticoagulant therapy. *New York Journal of Medicine*, 52, 725.
- CAIRD, D.M. & ELLIS, H. (1958) Intra-mural haematoma of duodenum. *British Journal of Surgery*, 45, 389.
- GABRIELE, O.F. & CONTE, M. (1964) Spontaneous intramural haemorrhage of the colon. *Archives of Surgery*, 89, 522.
- GILBERT, A.E. & JORGENSEN, M.C. (1960) Small bowel obstruction due to hemorrhage secondary to anticoagulant therapy. *American Journal of Surgery*, 99, 945.
- GOLDFARB, W.B. (1965) Coumarin-induced intestinal obstruction. *Annals of Surgery*, 161, 27.
- HAFNER, C.D., CRAWLEY, J.J., KRAUSER, R.J. & STRASSER, E.S. (1962) Anticoagulant ileus. *Journal of the American Medical Association*, 182, 947.
- HERBERT, D.C. (1968) Anticoagulant therapy and the acute abdomen. *British Journal of Surgery*, 55, 353.
- JAQUES, L.B. (1959) Dicoumarol drugs and the problem of haemorrhage. *Canadian Medical Association Journal*, 81, 848.
- KHILNANI, M.T., MARSHAK, R.H., ELIASOPH, J. & WOLF, B.S. (1964) Intramural intestinal haemorrhage. *American Journal of Roentgenology*, 92, 1061.
- RAINE, J.W.E. (1963) Abdominal complications of anticoagulant therapy. *New Zealand Medical Journal*, 62, 85.
- SEARS, A.D., HAWKINS, J., KILGORE, B.B. & MILLER, J.E. (1964) Plain roentgenographic findings in drug induced intramural hematoma of the small bowel. *American Journal of Roentgenology*, 91, 808.
- SPENCER, R.J., BATEMAN, J. & HORN, P. (1957) Intramural hematoma of the intestine: a rare cause of intestinal obstruction. *Surgery St Louis*, 41, 794.
- WIOT, J.F., WEINSTEIN, A.S. & FELSON, B. (1961) Duodenal hematoma induced by coumarin. *American Journal of Roentgenology*, 86, 70.

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Primary biliary cirrhosis in brothers

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Summary

This is the first report of two brothers who demonstrated the classical clinical course, histology, biochemistry and auto-antibodies of primary biliary cirrhosis. Both also exhibited an associated keratoconjunctivitis sicca and, in one, renal tubular acidosis resulted in severe systemic acidosis after lactulose therapy and with a subsequent intraperitoneal variceal rupture.

Screening of the relatives recalled a high incidence of 'auto-immune' disease and auto-antibodies.

THE recognition that a familial factor may be operative in the genesis of primary biliary disease follows the report (Walker *et al.*, 1972) of two sisters who

presented with symptoms of biliary obstruction, the one with pruritus and the other with biliary colic and jaundice. Both of these patients had high titres of antimitochondrial antibodies as is seen in primary biliary cirrhosis (Doniach *et al.*, 1966), but neither exhibited the biochemical findings (Fouik and Baggenstoss, 1969), the typical liver histology (Scheuer, 1968) or the insidious deterioration characteristic of that disease. The remainder of the family of these patients demonstrated a very high incidence of antimitochondrial and antithyroid antibodies although without apparent overt disease.

In a later study Chohan (1973) reported twin sisters with undoubted primary biliary cirrhosis.