Medical Memorandum

Spontaneous Perforation of the Colon Due to Alkaline Medication

The following case is reported because, although it is almost unique, it results from a very common combination of circumstances.

CASE REPORT

A man aged 68 was admitted to hospital complaining of severe lower abdominal pain. He had been investigated in another hospital six months previously because a duodenal ulcer was suspected, but a barium meal examination did not confirm this. Subsequently he had taken an unidentified alkaline preparation. On the morning of March 4, 1950, he paid a routine visit to his doctor. There he collapsed with severe lower abdominal pain which led to his admission to hospital. He gave a history of increasing constipation during the previous few months with occasional bleeding at stool.

Examination showed an old man with evidence of recent weight loss. There was a slight degree of shock with cold extremities and perspiration. The temperature was 96.8° F. (36° C.), pulse 66, respirations 20, and blood pressure 140/95. The lower abdomen was very tender, with muscle spasm almost amounting to rigidity. Rectal examination showed the bowel to be full of large hard faecal masses. Immediate laparotomy was advised, though it was some hours before the patient would consent to this.

Under general anaesthesia the abdomen was opened through a right lower paramedian incision. There was a moderate quantity of turbid fluid with a faecal odour in the peritoneal cavity. In the pelvic colon there was a perforation about 1 cm. across on the antimesenteric border. Around its edges was a ring of necrotic tissue about 1 mm. in width. Through the perforation a hard faecalith was protruding. This proved to be a very hard spherical whitish lump of faeces with a rough gritty surface. Palpation showed the whole of the descending and pelvic colon and the rectum to be full of similar material. The perforation was temporarily closed by suture, and the loop in which it lay was then exteriorized through a separate incision in the left iliac region, where it was fixed by passing a glass rod through its mesentery. The temporary suture was then removed so that the perforation became a colostomy opening. Exteriorization was performed under some tension owing to the shortness of the mesosigmoid. The abdomen was closed with drainage of the pelvis.

Intravenous fluids were given and gastric aspiration was continued for four days, and streptomycin, 1 g. twice daily, was administered. The patient progressed satisfactorily until the eighth day, when there was a small secondary haemorrhage from the colostomy, possibly due to the tension of the colon over the glass rod. Bleeding recurred and was fatal on the eleventh day.

Post-mortem examination confirmed the operation findings. In particular, the colon, both throughout its length and at the site of perforation, was normal. The condition was a perforation of an acute stercoral ulcer due to faecal impaction, presumably caused by alkaline medication, and occurring in an otherwise normal colon.

DISCUSSION

Spontaneous perforation of the colon—that is, perforation not due to external injury—is familiar to all surgeons with experience of abdominal emergencies. In discussing the aetiology, apart from malignant disease, Koucky and Beck (1940) mention diverticulitis, foreign bodies, enemas, compressed air, tuberculous ulceration, ulcerative colitis, typhoid, and dysentery, to which may be added simple ulcer of the ascending colon (Wilkie, 1937). Woodruff's 1952 review, apart from mentioning Brown's (1944) case, described below, adds no new predisposing cause to these.

Spontaneous perforation of the colon in the absence of any of these factors is very rare. The only cases at all similar to the present one are those of Brown (1944) and of Hoffert (1946). Brown's patient was a man of 30. A few minutes after rising he had a sudden abdominal pain of great severity. On admission to hospital he was shocked and had the signs of generalized peritonitis. At operation the abdomen contained thin turbid fluid. "In the pelvis was a small quantity of faeces. On the antimesenteric border of the pelvic colon close to the pelvi-rectal junction there was a laceration in the long axis of the bowel about 1 cm. long and with a mass of faeces protruding through it. The edges of the laceration were irregular and the bowel wall, apart from involvement in the general inflammation, was macroscopically normal." This patient recovered, and subsequent radiological examination failed to show any evidence of diverticula or foreign body. Brown was unable at that time to trace any similar case in the literature.

Hoffert's case, described two years later, is very similar to Brown's and almost identical with the case now reported. A male patient aged 63 was receiving treatment for duodenal ulcer. He developed signs of peritonitis, and x-ray examination showed free gas in the abdomen. At operation there were solid faeces throughout the left half of the transverse colon and descending colon. Two faecal balls were lying in the pelvis and there was a 2-cm. perforation in the sigmoid. This patient survived following a Paul-Mikulicz resection of the segment containing the perforation.

These two cases and the present one are remarkable in that the perforation occurred in a normal colon and in the absence of trauma. The mechanism of perforation in Brown's case is unexplained, but the fact that the patient was being treated for duodenal ulcer in the other two cases points to a previously unrecognized danger of alkaline medication. The site of the perforation on the antimesenteric wall in two of the cases suggests that this type of perforation is due to impaction of faeces causing tension gangrene, which appears first at that part of the wall with the poorest blood supply. Constipation is a well-known complication of certain alkaline powders, especially bismuth salts and aluminium hydroxide, and patients who have had these medicines prior to partial gastrectomy often develop post-operative diarrhoea due to faecal impaction in the rectum, a complication which may also occur if operation follows soon after a barium meal.

Even without the interruption of rectal function which follows an operation, old and constipated patients may develop faecal impaction while receiving alkaline powders, as another recent personal case shows. Hunt (1950) says: "Aluminium hydroxide and aluminium silicate are constipating and tend to produce dry hard stools with, in some cases, even troublesome faecal impaction. Magnesium trisilicate, on the other hand, in sufficient dosage to be effective in relieving pain is laxative and irritant to the intestine, so that colic borborygmi and intestinal flatulence make it difficult to use. A mixture of these two is rational . . . and probably the best of the antacids available."

The same principle is already familiar in the balancing of bismuth and magnesia in the older powders. Although this stasis seldom leads to perforation of the colon, minor degrees of impaction, irritation, and even ulceration are probably quite common. It is suggested, therefore, that if alkaline powders play any part at all in the treatment of peptic ulcer the two substances mentioned should be combined with liquid paraffin and a mild aperient (a combination likely to reduce calcium intake); or, better, an alkali which has a mild aperient action, such as magnesium carbonate or trisilicate, should be included in the mixture.

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