Volvulus of the Splenic Flexure of the Colon

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The definition of volvulus is an axial twist of a portion of the gastrointestinal tract along its mesentery. The involved bowel is obstructed partially or completely with a variable degree of arterial and venous occlusion. The colon is the most common site for volvulus. The splenic flexure is the least common site of colonic volvulus. We experienced a case of the volvulus of the splenic flexure. It will be the 30th case of the volvulus involving the splenic flexure in the English literature, to our knowledge. A 30-year-old woman was admitted due to abdominal pain and distention with vomiting. An emergency barium study revealed characteristic "bird beak" sign. Surgery was performed resecting the involved colon of splenic flexure. The result was excellent.

Key Words: Volvulus, barium enema and surgery

The first two cases of the volvulus affecting the splenic flexure was reported by Buenger in 1954. Since then only 27 more cases have been reported in the literature up to 1991 (Ballantyne, 1981; Ballantyne, 1985; Mindelzun and Stone, 1991). The volvulus of the colon accounts for 1~10% of all large bowel obstruction. And the splenic flexure is the least common site of the colonic volvulus (Lantieri et al. 1979; Mindelzun and Stone, 1991). The splenic flexure is fixed by the three ligamentous attachments of the gastrocolic, phrenocolic and splenocolic ligaments. Congenital absence or injury to the ligamentous attachments would lead to the state of volvulus. The operative findings are usually the absence of the ligaments and the elongation of the mesentery. Previous upper abdominal surgery is also common in this small group (Ballantyne, 1981; Jones and Fazio, 1989). Our case illustrates typical acute and chronic intermittent symptoms with absent ligaments.

CASE REPORT

A 30-year-old woman was admitted via the emergency room with crampy abdominal pain, progressive abdominal distention, and vomiting. She had many discomforts to abdominal distention and pain, and to intermittent flatulence and constipation since the age of 10 years. The discomforts had disappeared after flatulence. Sometimes she had noticed tympanic sounds on the percussion of abdomen. She has two sons who were delivered normally. During the third trimester of the first pregnancy she had been admitted to another hospital because of acute abdominal pain and distention with nausea. The second pregnancy was comfortable due to the careful control. On admission, the patient was slightly dehydrated and was experiencing some acute distress. The abdomen distended markedly as an abdomen of a pregnant woman in the third trimester, and was tympanic all over. No tenderness was present. Bowel sounds were high-pitched. There was no palpable mass on the soft abdomen. A collapsed rectum was noted on digital exami-
nation. The hematocrit was 34.3 percent and the leukocyte count was 10,900/mm³ with a normal differential. The specific gravity was 1.030 on the routine urinary analysis. The serum sodium was 133 mEq/l, potassium 3.8 mEq/l, chloride 113 mEq/l, and CO₂ 18 mEq/l.

A plain film of the abdomen revealed a markedly dilated coffee bean shape bowel loop in the left abdomen extending over the midline (Fig. 1). The gas distention of the intestine was also noted on the abdominal CT scan. And a coiled cord-like structure appeared on the left upper abdomen. An emergency barium study of the large bowel showed that the colon narrowed in a pin-point channel and assumed the curved configurations of the gas-distended bowel on the descending colon (Fig. 2). The barium passed into the markedly dilated gas-distended splenic flexure. The barium was retained in the distended loop in the post-evacuation study (Fig. 3). The patient was treated conservatively with intravenous fluids and decompressions through the nasogastric tube. Then
the patient was comfortable after the passage of large amounts of flatus and some feces. The conservative care continued for another three days. The distention was lessened day by day on the plain films of the abdomen. On the third day after admission the barium study of the small bowel was taken revealing no abnormality of other bowels.

The patient underwent exploratory laparotomy on the 3rd hospital day. The colonic splenic flexure was distended markedly, measuring about 25 cm in diameter. Other portions of the colon were not so distended. The diameter of the distal part was smaller in diameter than that of the proximal parts. There was no definite area of obstruction. There was evidence of chronic inflammation and fibrosis at the root of the mesentery of the splenic flexure. The distended loop rotated in a clockwise direction with redundant mesentery. The splenic flexure was freely movable with an absence of the phrenocolic ligament. Resection of the splenic flexure and part of the descending colon was done. The resected specimen was 35 cm long and 14 cm in diameter. The diameter didn’t return to normal size maintaining the distended state. The wall of the specimen was as thin as the abdominal wall by the chronic intermittent distention. The linea alba was broad, reaching about 1.5 cm. There was no abnormality of the myenteric plexus.

DISCUSSION

Splenic flexure of the colon is usually immobilized by ligamentous attachments and the retroperitoneal location of the descending colon. Volvulus is rare at the splenic flexure. Among the ligamentous attachments, the phrenocolic ligament plays an important role. The suggested etiologic factors are previous abdominal surgery, presence of congenital bands, and acquired adhesions and absence of ligaments (Mindelzun and Stone, 1991). In our case there was no previous history of abdominal operation, but she had a complete absence of phrenic and spleno-colic ligaments with an elongated and reduced gastrocolic ligament. These findings were similar to the case reported by Naraynsingh et al. And about two thirds of the patients had a history of previous abdominal operations. But Mindelzun et al. (1991) reported that prior surgery did not appear to play a role in the genesis of splenic flexure volvulus.

The patient usually complains of chronic intermittent constipation with the use of laxatives. Chronic constipation results in a markedly dilated redundant colon with an elongated mesentery. In the cases of the sigmoid volvulus the significant findings are noted characteristically on the plain films of the abdomen. The radiological findings are “bent inner tube” and “coffee bean” configurations. But in the splenic flexure there are no specific typical findings. The gas-distended bowel can be noted on the upper abdomen with the air-fluid level. The descending colon would be collapsed and containing little amount of feces. Sometimes the small bowel may distend moderately. The barium enema revealed a pointed and tapered “bird’s beak” at the anatomic splenic flexure. Mindelzun et al. (1991) suggested radiographic clues of the volvulus of the splenic flexure.

The radiographic clues are:
(a) a markedly dilated, air-filled colon with an abrupt termination at the anatomic splenic flexure,
(b) two widely separated air-fluid levels, one of which is in the transverse colon and the other in the cecum,
(c) and empty descending and sigmoid colon, and
(d) a characteristic beak at the anatomic splenic flexure in a barium enema examination.

The barium enema can’t reduce the state of obstruction. Surgery is needed soon after the diagnostic barium study. The surgery is performed from detorsion to fixation or resection of the colon. An extreme case even needed a total colectomy. Results have been excellent (Ballantyne et al. 1985; Mindelzun and Stone, 1991).

REFERENCES

Buenger RE: Volvulus of the splenic flexure of the colon. AJR 71: 81-83, 1954


