Case Report

Intestinal Obstruction due to Peritoneal Encapsulation of the Small Bowel—Report of a Case—

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We report an exceedingly rare case of peritoneal encapsulation presenting with small bowel obstruction. A 34-year-old man was presented with colicky pain, abdominal fullness, and vomiting. An examination revealed the existence of a right inguinal hernia but no incarceration. He was diagnosed of ileus, and a nasogastric suction was performed for decompression. After 2 days from admission, abdominal pain increased. An examination revealed Blumberg sign and abdominal defense. An emergency laparotomy was decided on with suspicion of strangulated ileus. The ileal loops were encapsulated and strangulated inside a peritoneum like sac, which occurred on the left side of the mesocolon. The sac occurred between the omentum and mesocolon, and encapsulated the small bowel and caused ileus. A division of the neck of the sac and excision of the enveloping membrane was completed, and it then released from strangulation. Histopathology of the sac showed peritoneal tissue. The patient recovered uneventfully.

Key Words : peritoneal encapsulation, ileus

Introduction

Peritoneal encapsulation (PE) of the small bowel is one of the rarest congenital malformations. We encountered a surgical case in which the peritoneal encapsulation of the small bowel may have resulted in the development of the intestinal obstruction.

Case Report

A 34-year-old man presented with a history of abdominal pain and abdominal fullness on May, 2002. The patient had no history of abdominal surgery or peritoneal infection and was taking no medication. He had broken the lumbar vertebra due to a traffic accident at 16 years old.

He consulted a home doctor. After 2 days, he vomited and was admitted to our hospital. An examination revealed the existence of a right

inguinal hernia but no incarceration. He was admitted immediately.

Blood biochemistry on the admission day showed the white cell count was 16,920/ μ l; Hemoglobin was 18.6g/dl; and CRP was 1.1mg/dl. A slight increase of inflammatory reaction and tendency of dehydration was noticed. Plain X-rays of the abdomen on the admission day showed dilated jejunal loops (**Fig. 1**). CT scans revealed a distended small bowel and intestinal fluid accumulation in the lower abdomen (**Fig. 2**). He was diagnosed of ileus by abdominal X-P. Nasogastric suction was performed for decompression. The next day the drainage of the fluid was about 50ml. He still had abdominal fullness, and extension of the small intestine, which was seen on the X-ray. The stomach tube was changed to an ileus tube. Two days after admission into the hospital, abdominal pain had increased. The examination

Fig. 1 Plain X-rays of the abdomen on the admission day showed dilated jejunal loops.

Fig. 2 CT scans revealed a distended small bowel and intestinal fluid accumulation in the lower abdomen.

revealed a Blumberg sign and abdominal defense. Plain X-rays of the abdomen showed the ileus tube proceeded to the upper part of the small intestine, but distended loops of the small bowel of the left upper abdomen were revealed. We then thought ilues developed in the patient. The preoperative diagnosis was strangulation

Fig. 3 The ileal loops were encapsulated inside a peritoneum like sac, measuring approximately a 20 cm mass.

Fig. 4 The mouth of the accessory sac was the obstructed site.

of the ileus caused by Meckel's diverticulum et al. An emergency laparotomy was decided on. During the laparotomy, grossly distended jejunal loops were seen in the left upper abdomen. The ileal loops were encapsulated inside a peritoneum like sac, measuring approximately a 20 cm mass (**Fig. 3**). The sac membrane occurred between the omentum and mesocolon. The greater omentum covered much of the sac anteriorly but was not connected to it. The sac was attached to the mesentery of the small bowel and mesocolon. The mouth of the accessory sac was an obstructed site (**Fig. 4**). The sac had adhered to the mesentery. The sac, occurring between the omentum and

Fig. 5 The resected membrane was 15 cm.

mesocolon, encapsulated the small bowel and caused ileus. A division of the neck of the sac and excision of the enveloping membrane was completed, and it was then released from strangulation. There was no adhesion, malrotation, or other abnormalities. The resected membrane was 15 cm in length (Fig. 5). The histology showed a fibrotic, congestive peritoneal tissue. There was no evidence of neoplasia. It was a so-called peritoneal band. The patient recovered uneventfully. He was operated on for a inguinal hernia at 14 days after the first operation, and was discharged on the 21st postoperative day. Three years after surgery, he remained asymptomatic.

Discussion

PE was first described by Cleland in 1868^{1)~3)}. PE is an exceedingly rare developmental abnormality in which the small intestine is encased in an accessory transparent peritoneal sac between the omentum and mesocolon⁴⁾. PE is thought to develop in the 12th embryological week when the peritoneum of the physiological umbilical hernia is drawn into the abdominal cavity along with the midgut⁵⁾. A classical sac engulfs the whole of the small bowel⁶⁾. A histopathology of the sac wall showed the peritoneal layer consisted of mesothelial cells⁷⁾.

Patients with PE of the small bowel usually have vague abdominal complaints such as epigastric discomfort, cramps, constipation alternating with diarrhea and anorexia; and rarely manifests as intestinal obstruction as in our case. PE cannot be diagnosed preoperatively; many are diagnosed for intestinal obstruction, acute abdomen, and strangulated ileus. And more often it is recognized only at laparotomy. Usually plain X-rays and contrast studies are negative, but Casas reported that a CT was useful for diagnosis of PE⁸⁾. PE must be differentiated from an abdominal cocoon and sclerosing encapsulating peritonitis. An abdominal cocoon is an acute or sub acute small bowel obstruction occurring in young women living in tropical regions⁹⁾. The small intestine is encapsulated with an opaque thickened fibrous organization, but it is not composed of mesothelial cells. Sclerosing encapsulating peritonitis is a rare complication of chronic peritoneal dialysis and also from use of the β -blocker practolol, and is characterized by a thick gray-white fibrous peritoneum covering the small intestine wall⁵⁾. Sclerosing encapsulating peritonitis presents widespread peritoneal fibrosis, ascitis, wall thickness of the bowel, stenosis, and adhesion which are usually found inside and outside the membrane and between the bowel loops. Other findings are diffuse peritoneal thickening, and calcifications in the peritoneum and intestinal wall. Histological examination of the fibrous peritoneum shows varying activity of chronic inflammation.

We could not definitely diagnose preoperatively as possible with other cases. We diagnosed as PE, because there was neither adhesion nor inflammatory change in the abdominal cavity and intra-membrane, and the sac showed peritoneal tissue histopathologically. PE is a rare disease, but rarely has been

associated with intestinal obstruction and acute aortic occlusion¹⁰⁾ and needs emergency treatment. It is a disease entity which should be recognized, especially when encountered during a laparotomy and treated appropriately.

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