CASE REPORT

Peritoneal Encapsulation in a Patient with Incomplete Situs Inversus

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ABSTRACT

Peritoneal encapsulation (PE) is an extremely rare congenital condition in which there is abnormal return of the midgut loop to the abdominal cavity in the early stages of development. It may be present in patients with congenital anomalies like incomplete situs inversus. Pre-operative diagnosis is possible with abdominal CT. A 71-year-old man with incomplete situs inversus was admitted to emergency department with symptoms and signs of peritonitis. Computed tomography (CT) of the abdomen showed characteristic features of the PE syndrome. He had exploratory laparotomy performed and arterial occlusion caused ileocaecal ischaemia and PE was observed. Capsule of PE and ileocaecal excision was done. Post-operative recovery was uneventful.

Key words: *Peritoneal encapsulation syndrome. Incomplete situs inversus. Peritonitis.*

INTRODUCTION

Peritoneal encapsulation (PE) is a very rare congenital anomaly characterised by what looks to be an accessory peritoneal membrane covering all or a part of the small bowels. Histopathology of the membrane is same with normal serosal structure. Position of organs into peritoneal encapsulation are normal.[1] Cases usually present with small bowel obstruction or can be an incidental finding during laparotomy.

We diagnosed peritoneal encapsulation during laparotomy in a case who had incomplete situs inversus.

CASE REPORT

A 71-year-old male presented to the emergency clinic complaining of abdominal pain, nausea and vomiting during last 7 days. On physical examination, he was mildly dehydrated, with a normal temperature, pulse, blood pressure and respiratory rate. There was rebound tenderness and rigidity in the abdomen. Bowel sounds were not audible. Clinically, he had peritonitis of an unknown cause. The haemoglobin was 18.5 g/dl, white cell count was 17.4 x 10^3/ml, serum electrolytes random, sugar and amylase were within normal limits. Serum urea level was 28 mg/dl and creatinine level was 1.4 mg/dl due to dehydration. Plain abdominal X-ray was normal. Thorax X-ray revealed situs inversus.

Computed tomography of the abdomen revealed a membranous capsule like structure surrounding the small intestine (Figure 1). Surgery was planned. During operation and after entering the peritoneal cavity, the small bowel was entirely covered with a thin membrane that had the appearance of an accessory peritoneum through which the small bowels were visible (Figure 2). Caecum and terminal ileum were necrotic (Figure 3). Gallblader was located to the left of falciform ligament. Excision of the membrane released the small bowels. The ileocaecal artery was found thrombosed. Ileocaecal resection and ileocolostomy were performed. He stayed in the intensive care unit for 2 days. Wound infection occurred postoperatively. Due to postoperative wound infection, skin sutures were taken out on day 4, and the dressing was left for secondary healing to occur. The patient was transferred from intensive care unit and the drains were taken out. Evisceration developed on postoperative day 7 and the skin incision was closed primarily. Patient was discharged on 11th postoperative day.

DISCUSSION

PE was first described in 1868 by Cleland and is characterised by the small intestine lying behind an accessory peritoneal membrane.[2,3] Because the peritoneal encapsulation is generally asymptomatic, some patients may not present.

The membrane is attached to the ascending and descending colon laterally, the transverse colon superiorly and the posterior surface of the parietal peritoneum inferiorly. It is believed to be caused by malrotation of the bowel during the 12th week of gestation; this causes the formation of an accessory sac from the peritoneum covering the umbilicus.[1] So it can be present together with some congenital anomalies. Malrotation of the gut has been described with peritoneal encapsulation.[4] Incomplete situs inversus and congenital epigastric hernia were present in this patient. Liver was

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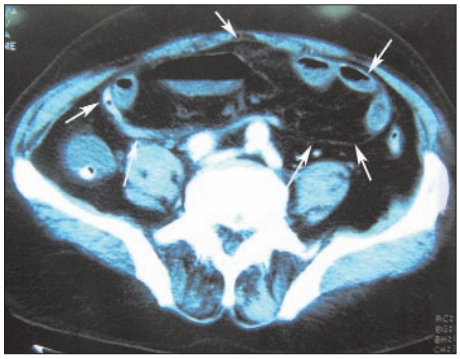

Figure 1: CT of the abdomen revealed a membranous capsule like structure surrounding the small intestine.

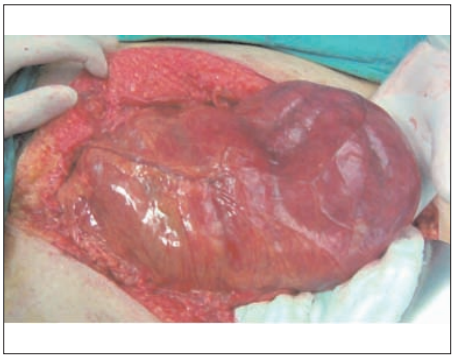

Figure 2: The small bowel was entirely covered with a thin membrane.

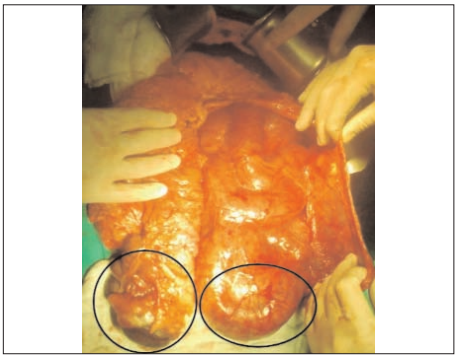

Figure 3: Necrosis was observed at caecum and terminal ileum.

left sided in location and the gallblader was to the left of the falciform ligament.

PE patients are generally asymptomatic but non-specific abdominal pain and distention may be present. The clinical presentation may be acute small bowel obstruction. Peritoneal encapsulation can be diagnosed incidental during laparotomy for another condition as this patient.[5-7] This patient's syptoms were not because of peritoneal encapsulation. His complaints like abdominal pain, nausea and vomiting were because of ileocaecal arterial thrombosis which caused ileocaecal infarction.

Fixed, asymmetrical distension of the abdomen and difference in the consistency of the abdominal wall to palpation can help in diagnosis.[2] Intestinal obstruction was not present in this patient. Abdominal wall rigidity and abdominal tenderness was present in this patient due to caecum infarction.

Pre-operative clinical diagnosis of PE is difficult. However, the diagnosis of peritoneal encapsulation - despite its rarity- can be suggested on the basis of CT studies.[8,9] The condition diagnosed pre-operatively at CT when a thin, delicate membrane was seen. Abdominal X-ray may show intestinal obstruction signs, if present. There were no signs of peritoneal encapsulation in abdominal ultrasonography and abdominal X-ray of this patient.

Membrane division during surgery is curative and on literature search no re-operation was reported on PE after dividing the encasing membrane.[10] In this case, the membrane was excised as well. If peritoneal encapsulation was diagnosed incidentally during another cause for laparotomy,[10] it may not be excised despite the case of procedure.[1] Some authors advocate the excision of the sac, when found incidentally at laparotomy.[7]

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