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Abdominal Cocoon: Unusual Cause of Intestinal Obstruction

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Abstract:

Abdominal cocoon syndrome (ACS) also known as sclerosing encapsulating peritonitis (SEP) is a rare condition that is generally identified in young females in tropical countries. The exact etiology is still unknown. Timely and accurate imaging and diagnosis is important to avoid morbidity and mortality. Preoperative diagnosis is difficult. It is usually diagnosed during surgery. Simple excision of the membrane and lysis of the adhesions produces optimal results. Breaking of adhesions needs to be done carefully; to prevent damage to serosal surface and perforation. Herein, we report the case of recurrent intestinal obstruction in a young female patient that was secondary to an abdominal cocoon and was managed surgically successfully in our hospital.

Key words: Abdomen, Humans, Intestinal Obstruction, Peritonitis, Tissue Adhesions.

Introduction

Abdominal cocoon is a rare condition of unknown etiology which rarely causes intestinal obstruction. In this condition variable length of bowel gets partially or totally encapsulated by dense fibro-collagenous membrane, forming a cocoon appearance; this may lead to complications such as intestinal obstruction. Because of this characteristic, in literature it is also called as sclerosing encapsulating peritonitis (SEP). It is more common in young adult women living in tropical areas. Preoperative diagnosis of this condition is very difficult and is usually diagnosed during surgery.

Case Report

A 31-year-old female patient presented to our hospital, complaining of colicky pain in abdomen, with associated complaints of nausea, vomiting and constipation for the past five days. She had previous episode of subacute intestinal obstruction three months back which was relieved spontaneously. The patient had no history abdominal surgery.

On physical examination abdominal distension was noted with an ill-defined nontender mass in lower abdomen. Plain abdominal X-rays showed dilated small bowel loops with air-fluid levels and CT scan of abdomen showed clumping of ileal loops, surrounded by a thin capsule and minimal fluid. The proximal bowel loops were dilated [Fig.1]. Laboratory findings were within normal limits. Exploratory laparotomy showed distal ileum loops encased in a cocoon-like fibrotic tissue forming a mass [Fig.2]. Removal of the membrane and lysis

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of the adhesions was done and bowel segments returned to peritoneal cavity. Blood supply of the bowel segment was intact with no signs of ischemia; therefore, no resection was required. Patient was discharged on seventh postoperative day without any complication.

Discussion

Abdominal cocoon syndrome (ACS), which is also called as sclerosing encapsulating peritonitis (SEP) is a rare condition with few cases described in the literature [1,2]. It is commonly seen in young and adolescent populations. It is more common in females than in males. ACS was first defined by Foo *et al*. in 1978 [1]. Despite various hypotheses, the etiology remains unknown. It could be primary or secondary. Primary condition is idiopathic, secondary condition is commonly seen in patients with chronic peritoneal dialysis, ventriculoperitoneal and peritoneovenous shunts, intraperitoneal chemotherapy, cirrhosis, beta blockers (practolol), orthotopic hepatic transplantation and abdominal tuberculosis [3-6]. However in our patient, the etiology appears to be primary, as all the known causes of secondary cocoon abdomen were ruled out. In ACS small bowel is affected mostly where bowel loops are encased in thick fibrotic membrane with adhesions.

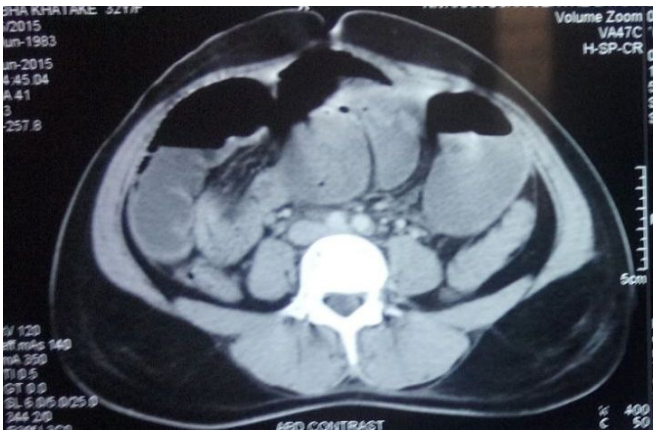

Fig.1: CT showing clumping of dilated ileal loops.

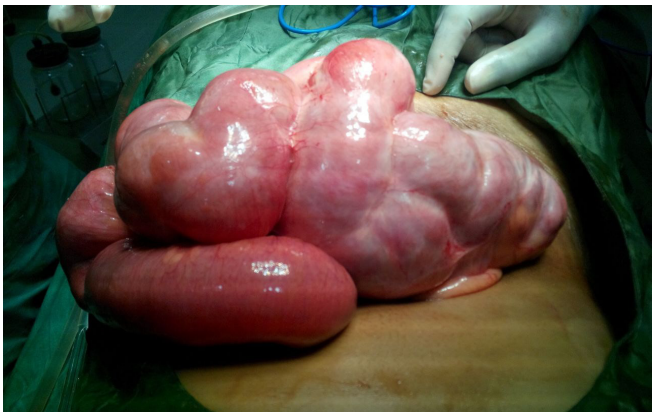

Fig.2: Intraoperative image showing cocoon.

Patients with cocoon abdomen may present with one or multiple episodes of acute or subacute small bowel obstruction. In this case, the patient had previous history of colicky abdominal pain and distension, which was resolved spontaneously [2,6]. Abdominal mass may also be present due to an encapsulated cluster of dilated small bowel loops. The preoperative diagnosis of ACS is difficult. Yip and Lee suggested 4 clinical characteristics to be aware of in preoperative diagnosis: a) Young female patients with no obvious cause of intestinal obstruction, b) medical history of similar episodes and spontaneously relief of symptoms, c) symptoms of intestinal obstruction but absence of severe abdominal distention, d) palpable, soft, non-tender abdominal mass [7]. There are no specific physical examination and laboratory findings suggestive of ACS. Plain radiographs of the abdomen may suggest features of intestinal obstruction [8,9]. Abdominal ultrasound may reveal an echogenic mass of dilated small-bowel loops surrounded by a thick rim of hypoechoic fibrous membrane. Barium meal films may show a characteristic serpentine configuration of the distal dilated small bowel within the cocoon [10]. CT is currently the most useful radiological method for diagnosis of ACS. CT findings may include clumping of small bowel loops in the center of the abdomen encased by

a soft-tissue density mantle, peritoneal thickening and calcification, clumping of small bowel loops, and lobulated fluid collections. [8,9] Bo Wei classified three types according to the extent of encasing membrane [11]: (i) Type I - the membrane encapsulates the small intestine partially, (ii) Type II - the entire intestine has been encapsulated by the membrane, (iii) Type III - the entire small intestine and other organs (e.g. appendix, cecum, ascending colon ovaries) are encapsulated by the membrane.

Cocoon abdomen may be confused with congenital peritoneal encapsulation, which is characterized by a thin accessory peritoneal sac surrounding the small bowel, and is an incidental finding [12]. Imaging findings are not always conclusive therefore definitive diagnosis is generally done during surgery. Early preoperative diagnosis and treatment of the syndrome is important to maintain the circulation of the encased bowel segments and to prevent bowel strangulation.

Surgical treatment is the main stay of treatment for this condition. Intraoperative findings show coils of intestine covered with thick fibrous membrane and adhesions between the coils. Simple excision of the membrane and lysis of the adhesions produces optimal results [2,12]. Breaking of adhesions needs to be done carefully; to prevent damage to serosal surface and perforation. Bowel resection is unnecessary unless there is an ischemic segment. In our case, encapsulating membrane was excised and adhesions were released. Resection of bowel was not required, because bowel loops were not strangulated. Long term postoperative prognosis is generally excellent.

Conclusion

Abdominal cocoon is a rare condition of unknown etiology. Diagnosis needs a high index of suspicion, as signs and symptoms are nonspecific and imaging findings are not always conclusive. Definitive diagnosis is done during surgery Treatment involves resection of the membrane and release of adhesions.

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