Abdominal Cocoon Syndrome: An Extremely Rare Cause of Small Bowel Obstruction

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Abstract
Abdominal cocoon syndrome or encapsulating peritoneal sclerosis is a rare condition causing small bowel obstruction. It is called cocoon syndrome because of the existence of an abnormal membrane that contains part or the entire small intestine. We present a case of a 49-year-old male, presenting to our department with recurrent episodes of obstructive ileus that did not respond to conservative treatment. He underwent exploratory laparotomy and a thick membrane covering the small bowel loops was found. The membrane was excised and sent for pathological examination. Abdominal cocoon syndrome is an acquired condition caused by an inflammatory process that is not yet completely understood. There are many theories for the pathophysiology of the disease. In most cases, the diagnosis is established during surgery. Complete removal of the membrane is the indicated surgical treatment. In mild cases, when the diagnosis is made preoperatively, conservative treatment should be the first choice.

Categories: Gastroenterology, General Surgery
Keywords: cocoon syndrome, intestinal obstruction

Introduction
There are reports in the literature about the existence of an abnormal membrane encapsulating the intestine since 1968 [1]. There are several different presentations of this abnormality [1]. Abdominal cocoon syndrome also known as primary sclerosing encapsulating peritonitis is a rare cause of small bowel obstruction [2]. The exact pathophysiology of the disease remains unknown, although many hypotheses have been made [2,3]. Computed tomography with intravenous contrast is considered the most useful radiological examination for the diagnosis of this abnormality as far as for the decision-making [4]. In most cases, the definitive diagnosis is made during surgery [2,3].

Case Presentation
A 49-year-old male experienced recurrent obstructive ileus, counting two admissions in our department within three months, treated conservatively. The third time he underwent an exploratory laparotomy when all conservative measures failed.

The patient’s previous medical history included only hyperlipidemia, treated with an oral agent. One month before the first episode of intestinal obstruction he underwent emergency surgery in another institution for acute appendicitis and appendectomy was performed. The surgeon noticed an abnormal membrane covering part of the ileus, and a sample of the tissue was sent for histological examination. The findings were non-specific, indicating a membrane formed of connective tissue.

The diagnostic workup during his second admission included an upper GI endoscopy and a barium-contrast examination. A CT scan with oral and intravenous contrast was scheduled in the last admission. The endoscopy revealed gastritis, caused by helicobacter pylori, while the barium study showed no abnormalities. The CT scan revealed a distended stomach and upper jejunum, especially near the ligament of Treitz (Figures 1, 2). It also revealed an area of the jejunum with thickened wall and narrowed lumen.
The patient experienced incapacity of feeding properly and was malnourished. During hospitalization he was supported with parenteral nutrition and a decision of laparotomy was made, as no amelioration of his condition was observed with conservative measures.
He underwent laparotomy through a midline incision. By entering the abdominal cavity, a dense membrane was found encapsulating the stomach, the small intestine and part of the large intestine (transverse colon and the front of the ascending and descending colon) (Figures 3, 4). The whole membrane was excised and extended adhesiolysis was performed, releasing the small bowel loops (Figure 5). The entire small intestine was viable, without serosal tears. The patient had an uncomplicated postoperative period and left hospital the 12th postoperative day.

**FIGURE 3: Intraoperative findings.**

By entering the abdominal cavity a thick membrane covering the small intestine is identified.
FIGURE 4: Intraoperative findings.
A loop completely covered with the membrane.

FIGURE 5: Intraoperative findings.
The membrane is completely removed.

The membrane was sent for histological examination. The pathology report of the membrane revealed connective tissue with the presence of inflammatory cells.

One week after he was discharged, the patient experienced retching and vomiting when consuming liquids, while surprisingly he could tolerate eating solid food. He was advised to be hospitalized again with food...
Discussion

The existence of an abnormal membrane encapsulating the intestine has been reported in the literature since 1968 [1]. There are several different variations of this abnormality [1]. In 1968, Cleland described a disease with the name peritoneal encapsulatio...
Additional Information

Disclosures

**Human subjects:** Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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