



A rare case of abdominal cocoon



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AIM: Abdominal cocoon is a rare cause of intestinal obstruction usually diagnosed incidentally at laparotomy. It manifests by forming a membrane that typically encases the small bowel loops, leading to mechanical obstruction. Preoperative diagnosis is difficult. The etiology of this condition is not well understood; however, it is a form of chronic irritation and inflammation.

METHOD: A 33 years old male, from Bangladesh, presented to our emergency department complaining of abdominal pain, nausea, and vomiting. CT abdomen shows a picture of intestinal obstruction at the level of the small intestine. Intraoperative findings showed encapsulation of small bowel by a dense whitish membrane as a cocoon. Histological examination showed a granulomatous peritonitis and *Ascaris Lumbricoides* in the bowel resected.

RESULTS AND CONCLUSIONS: The preoperative diagnosis of abdominal cocoon is difficult and hence, the diagnosis is usually confirmed by laparotomy. Surgery remains the cornerstone in the management of abdominal cocoon. The pathogenesis of abdominal cocoon remains elusive and has been associated with several conditions. The initial diagnosis of our patient was bowel obstruction from cocoon syndrome (CT and intraoperative findings) probably primitive, and only histologically proved granulomatous peritonitis associated with the presence of the parasite.

KEY WORDS: *Ascaris Lumbricoides*, Cocoon syndrome, Intestinal obstruction, Granulomatous peritonitis

Introduction

Abdominal cocoon is a rare condition that refers to total or partial encapsulation of the small bowel by a fibro-collagenous membrane or cocoon with local inflammatory infiltrate leading to acute or chronic bowel obstruction¹. Preoperative diagnosis is difficult and is usually

established during laparotomy. The etiology of this condition is not well understood; however, it is a form of chronic irritation and inflammation. It is of two types – Primary or idiopathic, and secondary. The primary form of the disease is commoner, and has been classically described in young adolescent females from the tropical and subtropical countries. The secondary form comprises a history of previous abdominal surgery or peritonitis, chronic ambulatory peritoneal dialysis, prolonged use of the α -blocker prazosin, liver cirrhosis, sarcoidosis, systemic lupus erythematosus, ovarian teratoma, and tuberculous etiology².

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Case report

A 33 years old male, from Bangladesh, presented to our emergency department complaining of abdominal pain,

nausea, and vomiting. He had clinical history of several attacks of abdominal pain over the last seven months. The patient lastly traveled to Giamaica, just one year before. The patient had no history of previous abdominal operation. Bowel sounds were a bit hyperactive, and rectal examination was normal. The leukocyte count was 15000. CT abdomen revealed distension fluid-gas of the stomach and proximal small-bowel loops with multiple air-fluid levels encased within enhancing thickened membrane, the walls of some jejunal loops appeared thickened, there was effusion fluid between the loops of small bowel and mesentery hyperdensity (Fig. 1). The patient underwent emergency explorative laparotomy. Intraoperative findings showed complete encasement of the total small bowel and omentum by a thin, membranous sac . Adhesiolysis was done to release the loops of the intestine (Figg. 2, 3). After removing part of the membrane it was possible to see that the visceral peritoneum was normal. On the peritoneal surface, ubiquitously, many

yellow friable nodules were present (Fig. 3). The colon was entirely covered by the membrane, appearing as retroperitoneal. It was necessary to resect a portion of the last ileal loop because it was ischemic due to adhesions.

Results

The histological examination of the membrane revealed neutrophil granulocyte infiltration and eosinophilic fibrosis, vascular congestion and focal fibrinoid necrosis, granulomatous inflammation with multinucleated giant cells. Within the intestine removed there was a parasitic worm-like, with a length of 21 cm, relating to *Ascaris Lumbricoides* (Fig. 4). The histological diagnosis was therefore of granulomatous peritonitis caused by *Ascaris lumbricoides*. The patient showed a significant recovery postoperatively and was discharged from the hospital uneventfully.

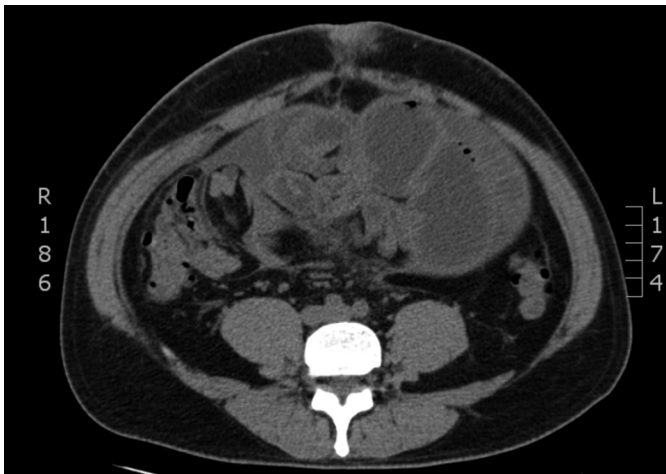


Fig. 1.



Fig. 3.

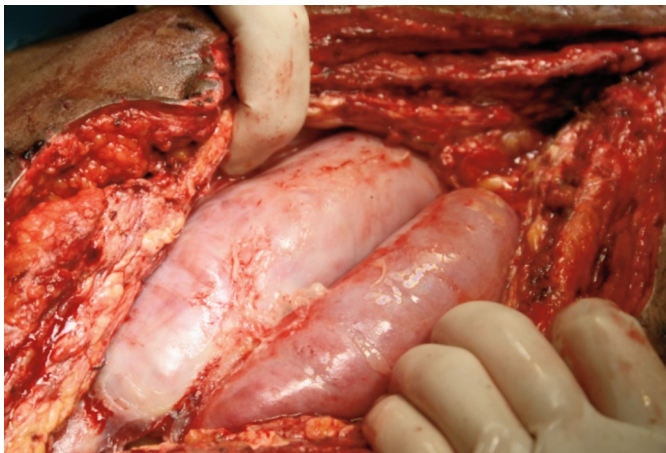


Fig. 2.



Fig. 4.

Discussion

The preoperative diagnosis of abdominal cocoon is difficult and hence, the diagnosis is usually confirmed by laparotomy. Abdominal cocoon could be classified as primary (idiopathic) or secondary³. The primary form is more common and occurs mainly in young women from tropical zones. The clinical presentation of abdominal cocoon may be acute, sub-acute or chronic intestinal obstruction, nausea and vomiting. Some authors have described a few radiological signs on plain x-ray, barium series and computerized tomogram scan, but as a rule, it is difficult to be able to make a definite pre-operative diagnosis of this entity².

Surgery remains the cornerstone in the management of abdominal cocoon. The pathogenesis of abdominal cocoon remains elusive and has been associated with several conditions. The known causes include patients on chronic peritoneal dialysis⁴, abdominal tuberculosis⁵, abdominal surgery⁶, hepatic transplants⁷, and the now-obsolete beta-blocker practolol⁸. The operative procedure of choice is simple membrane dissection and extensive adhesiolysis for release of the entrapped intestine.

Conclusions

The initial diagnosis of our patient was bowel obstruction from cocoon syndrome (on the basis of a CT and confirmed by intraoperative findings) probably primitive, and only histologically proved granulomatous peritonitis associated with the presence of the parasite. It's demonstrated that *Ascaris L.* is able to determine a granulomatous peritonitis^{9,10}, which in our case probably had an evolution in the form of encapsulant peritonitis (cocoon syndrome), although it is not possible to exclude a primitive form of the same¹¹, though the histological examination of the membranous tissue in a primary cocoon shows proliferation of fibroconnective tissue with non-specific chronic inflammatory reaction.

Riassunto

Il bozzolo (cocoon) addominale è una causa rara di ostruzione intestinale, generalmente diagnosticata casualmente alla laprotomia. Si manifesta per la formazione di una membrana che tipicamente incarcera le anse del tenue, provocandone l'occlusione meccanica.

La diagnosi preoperatoria è difficile, e il momento etimologico non è ben compreso; ad ogni modo si tratta di una forma di irritazione ed infiammazione cronica.

L'osservazione presentata riguarda un uomo del Bangladesh di 33 anni, ricoverato nel nostro dipartimento di emergenza per dolori addominali, nausea e vomito. La CT addominale mostrava il quadro di un'occlusione intestinale a livello del tenue. All'intervento

si è presentato un incapsulamento del tenue da parte di una membrana biancastra e densa come un bozzolo. Il quadro istologico è stato quello di una peritonite con ritrovamento di *Ascaris Lumbricoides* nel tratto intestinale resecato.

La diagnosi di cocoon addominale è difficile in fase preoperatoria, e dunque viene completata generalmente solo alla laparotomia, e la chirurgia resta il mezzo terapeutico fondamentale.

La patogenesi del cocoon addominale rimane elusiva, associate com'è a varie condizioni.

La diagnosi iniziale nel nostro paziente è stata quella di occlusione intestinale da sindrome da incapsulamento (dai reperti TAC ed intraoperatori) di probabile natura primitiva, e solo la prova istologica ha dimostrato trattarsi di una peritonite granulomatosa associata alla presenza del parassita.

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