

A chest X-ray may show evidence of pulmonary tuberculosis in up to 20% of cases.² Acid-fast bacilli are rarely recovered from the biopsy material, although fine-needle aspiration cytology may have a higher yield.² Mycobacteria are only rarely cultured from gastric lavage samples.⁴ Polymerase chain reaction amplification of mycobacterial DNA may improve the rate of detection.¹⁰ However, false negatives are reported in 40–65% of cases.¹¹ Preoperative endoscopic biopsy rarely reveals granulomas because these lesions are predominantly submucosal, and endoscopic biopsies often fail to include the submucosa. In a review of 27 patients who underwent endoscopic biopsies for duodenal tuberculosis, granulomas were found in only 7 patients although 20 had images of non-specific duodenitis.⁴ Rao et al showed that only 2 of 20 patients with gastroduodenal tuberculosis had positive endoscopic biopsies.² All the patients with periampullary tuberculosis described in literature so far underwent surgical resection (two cases underwent triple bypass^{1,3} and other two underwent Whipples resection²). In all these cases the diagnosis of tuberculosis was made after the surgery and antitubercular treatment was given post operatively. In our case diagnosis of periampullary tuberculosis could be established before surgery and it could thereby avoid surgery.²

Conclusion

Periampullary pseudotumors need to be considered and ruled out in all patients with suspected malignancy in periampullary area. Prompt diagnosis of periampullary tuberculosis can avoid extensive resection and antitubercular treatment alone can lead to complete resolution of symptoms.

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Chronic encapsulating peritonitis or cocoon abdomen

Introduction

Abdominal cocooning, otherwise called sclerosing/ encapsulating peritonitis (SEP) or chronic encapsulating peritonitis, is a rare surgical disease s of uncertain aetiology, complex in presentation and would need a high index of suspicion for diagnosis.

Case report

A 43-year-old man from South India presented in May 2011 with 2 weeks' history of non-bilious vomiting, colicky central abdominal pain which would aggravate on food intake and relieved with passage of flatus. There was a history of similar attacks of vomiting and abdominal pain during the past 1 year. Erect X-ray abdomen showed distended ileal loops. Contrast-enhanced CT (CECT) scan of the abdomen showed cocooned ileal loops with posteriorly displaced caecum. Diagnostic laparoscopy was performed, which confirmed cocooned terminal ileal loops including ileocaecal junction. A trial release of the enclosing membrane was carried out laparoscopically; but was not effective and hence was converted. Thick membranous adhesions (**Figure 1-3**) between the terminal ileal loops measuring about 4 feet were released. The membrane was sent for histopathological examination, which confirmed fibrocollagenous tissue. Over the next 5 days, the patient returned to normal bowel movements and was discharged on day 7. The patient was followed up for 6 months and has no recurrence of obstruction.

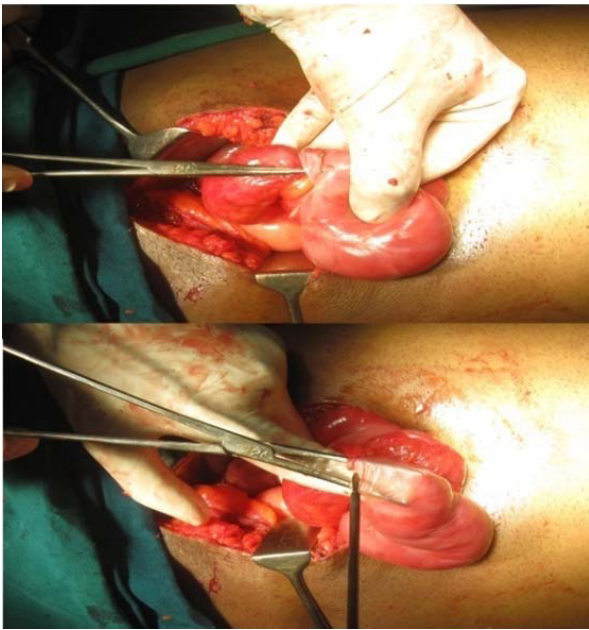


Figure 1: Terminal ileal loops in a thick leathery membrane



Figure 2: Membranes extending onto the mesentery leading to interloop adhesions and conglomeration.



Figure 3: Limited membrane stripping of the cocoon and releasing the bowel loops.

Two adolescent girls of 13 years (subject A) and 14 years (subject B) of age with similar clinical features presented during May 1993. Both the girls belonged to the Bedouin tribe of Southern Oman called the South Sharqia region, where the staple diet is rice and fish. Both girls presented with pain abdomen in the epigastric and umbilical region which was colicky in nature. Subject A presented with acute intestinal obstruction, though pain was being felt on and off since the past 1 year. Subject B presented with subacute obstruction with pain present for the past 6 months.. In both the cases, there was no ascitis; systemic examination was otherwise normal and the routine investigations were within normal limits. Chest X-ray did not show any evidence of active or quiescent tuberculosis. X-ray abdomen in both the cases showed multiple fluid levels with distended ileal and jejunal loops. Small bowel enema study in Subject B showed the terminal ileum morphologically resembling the colon. Both the patients were subjected to laparotomy.

The specific findings were same in both the patients. The terminal ileal loops up to the ileocaecal junction were found enveloped in a tough leathery envelope which was whitish in colour. This ball of intestine was sitting over the caecum pushing it posteriorly. There were adhesions between the undersurface of the liver and the right colon with a thin membrane extending over the right lobe of the liver. In both the cases, the greater omentum was found stunted in size. Since it was difficult to incise the envelope to release the intestines without injuring them in the process, a limited ileocaecal resection was done. Both the patients had an uneventful recovery. Histopathology was consistent with encapsulating peritonitis. Both the patients were well after 2 years of follow-up.

Discussion

The abdominal cocoon is a rare condition that refers to total or partial encapsulation of the small bowel by a fibrocollagenous membrane leading to acute or chronic bowel obstruction.^{1,2} Various synonyms of this rare disease are—"peritonitis chronica fibrosa incapsulata", and "SEP".³ The aetiology and pathogenesis of abdominal cocoon syndrome are obscure. It can be primary/idiopathic or secondary. The secondary type of abdominal cocoon is due to long-term peritoneal dialysis with infections occurring through the infusate, orthotopic liver transplantation, sarcoidosis, tuberculosis, systemic lupus erythematosus (SLE), malignancy and in postoperative cases especially in abdominal wash-out with povidone iodine.⁴ The prevalence of abdominal cocoon in patients undergoing

continuous ambulatory peritoneal dialysis (CAPD) ranges from 0.5% to 2.8%. More than 50% of patients acquire the disorder within an average of 4 months after termination of CAPD therapy.^{5,6} Basu et al., and Laloo et al., have described that abdominal kochs was a rare causative factor.^{7,8} These aetiological factors may predispose patients to peritoneal irritation and inflammation, which finally leads to peritoneal fibrogenesis.^{9,10} SEP associated with practolol therapy was first described by Brown et al., and Cook and Foy.^{11,12}

Primary abdominal cocoon occurs mainly in young women from the tropical and subtropical zones. Primary or idiopathic abdominal cocoon was first described by Foo

et al., in 1978, among adolescent girls and was postulated to be due to retrograde menstruation with superimposed viral infection leading to the subclinical type of primary peritonitis leading to intestinal obstruction.¹³ But, from India, a 4-year-old girl was reported with abdominal cocoon¹⁴ and subsequently a similar premenarcheal case was reported from Saudi Arabia.¹⁵ One of our subjects (A) was also premenarchial. We postulate that poor perineal hygiene would have led to subacute bacterial infection when they are consummated after marriage. The retrograde spread of infection on reaching the peritoneum through the fallopian tubes results in encapsulating peritonitis of the ileum. The responsible microorganisms may be endemic and may have predilection for the genital tract.¹⁵ Whether a vasculitis in response to consumption of improperly cooked fish could be the inciting factor needs to be investigated. Both the subjects showed adhesions between the undersurface of the liver and the right colon which might also indicate the congenital origin of this membrane. Among girls reported till 1994 with spontaneous encapsulating peritonitis all except three were Asians and only one was an Arab from the Middle East.¹⁶ A Medline search for abdominal cocoon from 1978 to 2007, yielded 14 male patients with idiopathic aetiology. Tuberculosis can also be a cause of abdominal cocoon syndrome in male patients.^{17,18} . Most cases of an idiopathic abdominal cocoon present as recurrent intestinal obstruction. The terminal ileal coiled up in a concertina-like fashion and enveloped in a thick leathery membrane with flimsy interloop adhesions are the characteristic operative findings. Gentle handling of the intestine, resection of the entire enveloping membranes and meticulous release of interloop adhesions is the surgical treatment of choice, which has a very low incidence of recurrence.

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