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A ruptured infected mesenteric cyst diagnosed on laparoscopy for suspected appendicitis

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Abstract

Lower abdominal pain of acute onset in young women with a negative pregnancy test is a frequent reason for referral to the general surgical team and the differential diagnoses include acute appendicitis, complicated ovarian cysts and pelvic inflammatory disease. Intestinal and mesenteric cystic disease is a rare entity and less than half of cases present acutely. We present a case of a 25-year-old woman who underwent diagnostic laparoscopy for acute lower abdominal pain and was diagnosed with a ruptured, infected mesenteric cyst.

Keywords laparoscopy, mesenteric cyst, appendicitis, abdomen, acute, general surgery

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Introduction

Lower abdominal pain of acute onset in young women with a negative pregnancy test is a frequent reason for referral to the general surgical team and the differential diagnoses include acute appendicitis, complicated ovarian cysts and pelvic inflammatory disease.

Intestinal and mesenteric cystic disease is a rare entity and less than half of cases present acutely. We present a case of a young woman who underwent diagnostic laparoscopy for acute lower abdominal pain and was diagnosed with a ruptured, infected mesenteric cyst.

Case report

A 25-year-old woman presented to the acute surgical team with a 24-hour history of sudden onset generalized abdominal pain, worsening in severity. She had an associated fever, malaise and anorexia. She did not complain of any urinary symptoms, dyspareunia or vaginal discharge. At the time of presentation, she was approximately midway through a regular menstrual cycle. She was otherwise fit and well with no previous medical history and on no regular medications. She did admit to a diarrheal illness one month previously during which an out-patient stool culture had grown *Campylobacter jejuni.*

On examination, she was noted to be tachycardic with a heart rate of 110 beats per minute and fever at 38.0°C. She was tender throughout the lower abdomen, mostly in the suprapubic area with guarding. Urinalysis was negative for blood, nitrites and leukocytes and a urinary pregnancy test was negative. Her blood investigations revealed a raised white cell count of 19.1 (normal range 4 – 11 10^9/L) and a C-reactive protein of 3 (normal range 0 – 10 mg/L). An ultrasound examination was not performed. She was discussed with the gynecology team who agreed with our management plan to perform a diagnostic laparoscopy and was available to attend theater if required.

Diagnostic laparoscopy was performed via a 10 mm infra-umbilical camera port and a 5 mm left iliac fossa instrument port. A small collection of pus was noted in the pelvis although the uterus, ovaries and appendix were macroscopically normal. The pus subsequently showed pus cells on microscopy but no organisms were cultured. On inspection of the small bowel, primarily in search of a Meckel's diverticulum, a 160 mm length of cystic and nodular change involving the mid-ileum and neighboring mesentery was found. The rest of the small bowel was normal. One cystic lesion on the posterior aspect of the mesentery had ruptured with evidence of surrounding induration [Fig. 1]. The left iliac fossa stab incision was lengthened to 40mm, creating a mini-laparotomy incision to enable resection of the effected length of small bowel and a hand-sewn end-to-end bowel anastomosis was performed. The resected bowel was opened along its antimesenteric border and cystic disease affecting both the mesentery and bowel wall was confirmed [Fig. 2]. Her post-operative course was uneventful and she was discharged home 5 days after surgery.

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Conflicts of Interest: None

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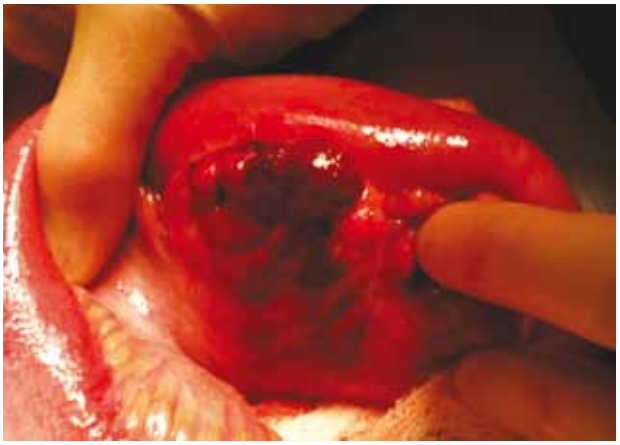

Figure 1 Intra-operative photograph of segment of small bowel affected by mesenteric and intestinal cystic disease showing the ruptured infected mesenteric cyst abutting the bowel wall

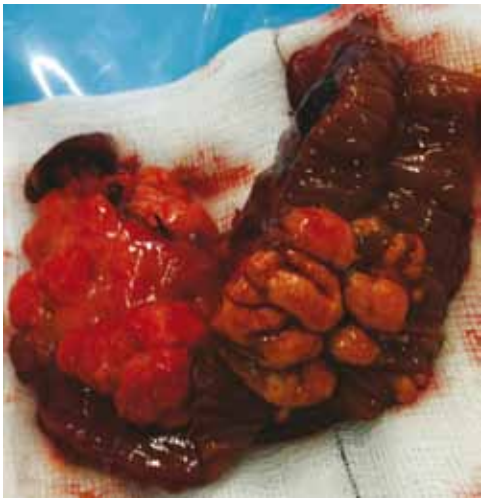

Figure 2 Resected segment of small bowel opened along its antimesenteric border. Cystic disease affecting both the mesentery and all layers of the small bowel wall can be seen

Histology identified these changes as localized intestinal and mesenteric lymphatic cyst disease. Dilated lymphatic channels were noted to extend throughout the full thickness of bowel wall and into the mesentery [Fig. 3].

Discussion

Intestinal and mesenteric cystic disease is rare and has been estimated to account for one in 100,000 acute surgical admissions [1]. Diagnosis is established via one of three routes: Firstly, patients may be asymptomatic and the disease is discovered coincidentally on imaging or intra-operatively. Secondly, patients may present with non-specific symptoms

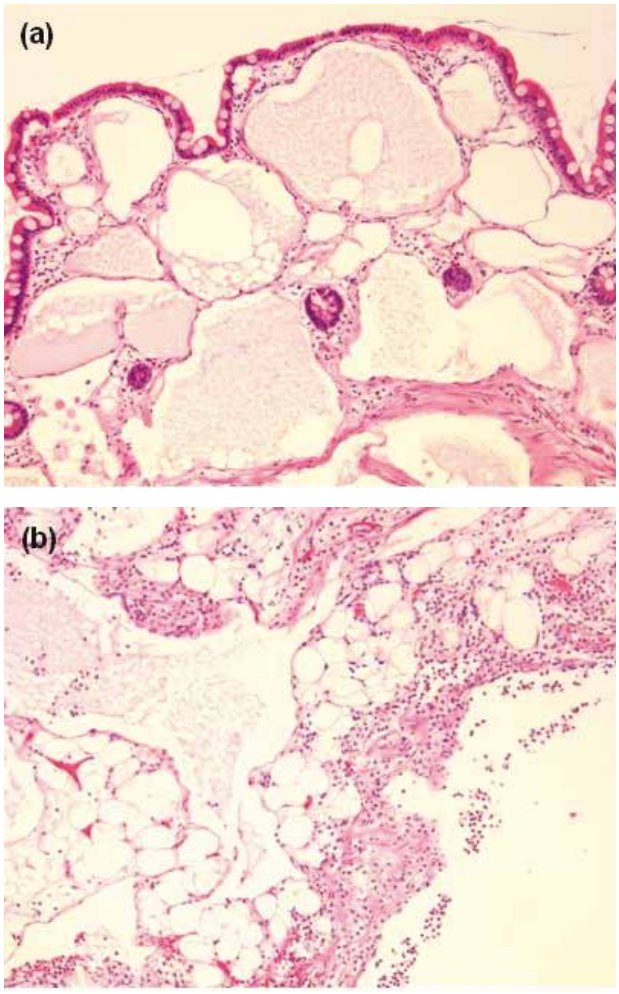

Figure 3 Hematoxylin and eosin stained sections of microscopic findings, magnification x100. Mucosa and submucosa (a) show dilated lymphatics. Serosal fat (b) shows dilated lymphatics with evidence of acute inflammation

prompting investigation or thirdly, approximately one third of patients develop complications and present acutely as in our case.

Complications include bowel obstruction and volvulus [2], hemorrhage [3], infection and rupture. Rupture of a spontaneously infected mesenteric cyst is extremely rare. To our knowledge there are only three other reports in the literature. One case was a middle-aged male with a known asymptomatic 12 cm intra-abdominal cystic lesion treated conservatively for nine years before presenting acutely once the cyst had become infected and ruptured [4]. Another case was of an 18-year-old female presenting acutely and found to have a lower abdominal cystic lesion on ultrasound prior to laparotomy [5]. In both these cases *Staphylococcus aureus* was cultured from the peritoneal fluid. The third case was a pediatric patient again treated by laparotomy following acute presentation, although this time *Escherichia coli* was cultured [6]. An ultrasound was also performed in this

case showing a multilocular cystic structure in the lower abdomen suspicious of an ovarian cyst. Ultrasonography is frequently performed in women presenting acutely with lower abdominal pain to diagnose ovarian cysts and in this, albeit rare case, can lead to misdiagnosis. It has been suggested that CT and MRI are better modalities to decipher the location and contents of a suspected mesenteric cyst pre-operatively [1].

In addition to the reports of infected cyst rupture, there are other reports of non-ruptured infections attributed to *Streptococcus pneumoniae*, salmonella enteritis and mycobacterium tuberculosis [7,8].

Mesenteric cysts have been classified based on their histopathological findings [9], the first type consisting of cysts of lymphatic origin also known as lymphangioma, as in our case. It has been suggested that ectopic lymphatic tissue or blocked lymphatic channels may be the causative developmental abnormality. The mechanism that such can infect a cyst is unclear. The histopathology in this case did however reveal patent lymphatic channels extending to the bowel wall and therefore lymphangitis with infection from bowel organisms would seem a plausible explanation.

Emergency attendances in female patients with lower abdominal pain are often referred to general surgeons following a negative pregnancy test to assess for the possibility of appendicitis. Even though our case is rare, surgeons should be aware of ruptured or infected mesenteric cysts as part of the differential diagnosis. Indeed, cases reported in the literature describe initial referral as appendicitis [10] or ovarian cysts [5,6].

Diagnostic laparoscopy is now favored in patients, especially females, with suspected appendicitis as this helps to establish a diagnosis and reduces the negative appendicectomy rate. We therefore suggest that if during laparoscopy, the appendix and ovaries appear normal, a thorough search along the small bowel and its mesentery is conducted for both a Meckel's diverticulum and mesenteric cystic disease.

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