An abdominal tuberculosis case mimicking an abdominal mass

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Abdominal tuberculosis is rare in childhood. It may be difficult to diagnose as it mimics various disorders. We present a 12-year-old child with an unusual clinical presentation who was diagnosed with abdominal tuberculosis only perioperatively. *Ann Pediatr Surg* 9:81–83 © 2013 Annals of Pediatric Surgery.

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Introduction

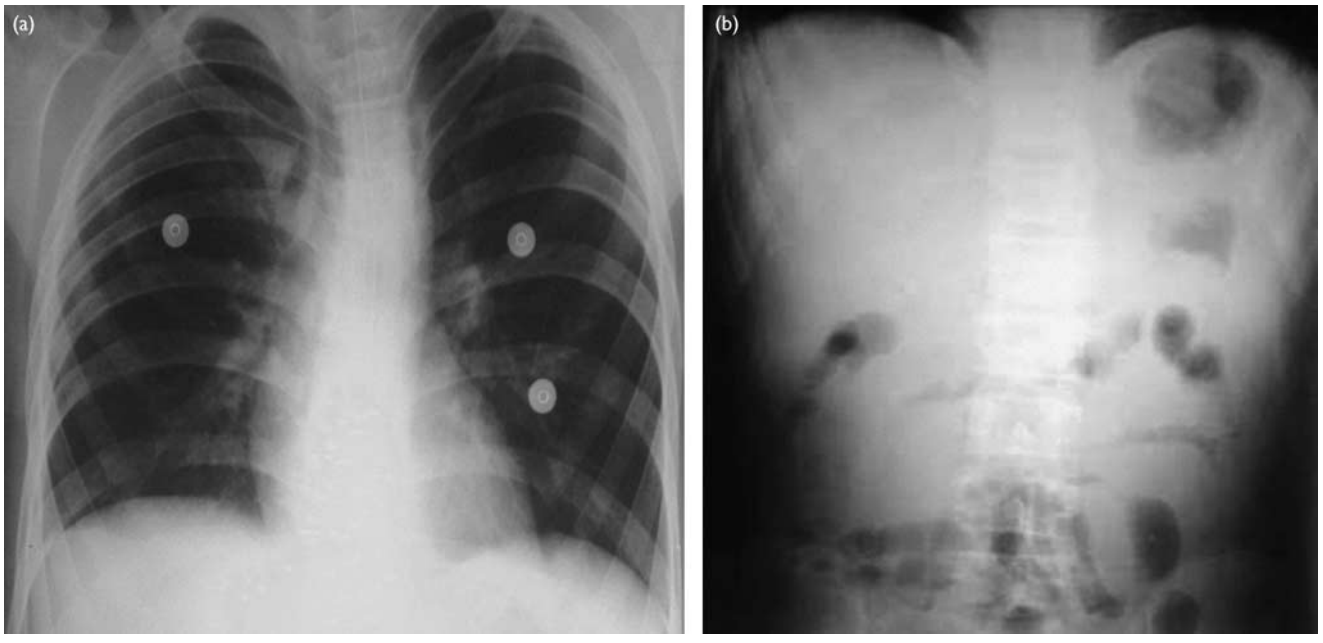
Tuberculosis continues to be an important healthcare problem, especially in developing countries. Abdominal tuberculosis is quite rare and can present with different clinical features in children compared with adults. It can be difficult to diagnose as it can mimic various abdominal diseases.

Case report

A 12-year-old boy presented with increasing abdominal swelling and fever that had been persistent for 10 days. His history revealed that he had experienced occasional abdominal pain for the last 3–4 years and had also been suffering from an upper respiratory tract infection for 1 week. The physical examination showed that the abdomen was more protuberant than usual. There was hyperemia around the umbilicus. A mass with undefined borders that filled the whole abdomen was present, and the paraumblical area was tender on palpation. The posteroanterior chest and plain abdominal radiographs showed nonspecific findings (Fig. 1). Abdominal ultrasonography revealed stage 1 hydronephrosis, minimal splenomegaly, a multiloculated cystic, and a fine septated mass 51×15 mm in size adjacent to the anterior border of the liver and multiloculated cystic fine septated masses 51×38 mm in size adjacent to the pancreas inferiorly. There were also multicystic fine septated structures that filled the pelvic region and expanded into the right and left paracolic area together with peritoneal thickness.

The preliminary diagnosis was mesenteric cyst or lymphangioma. MRI showed fluid collections that filled

Fig. 1



Nonspecific findings. (a) PA chest graphy and (b) plain abdominal graphy.

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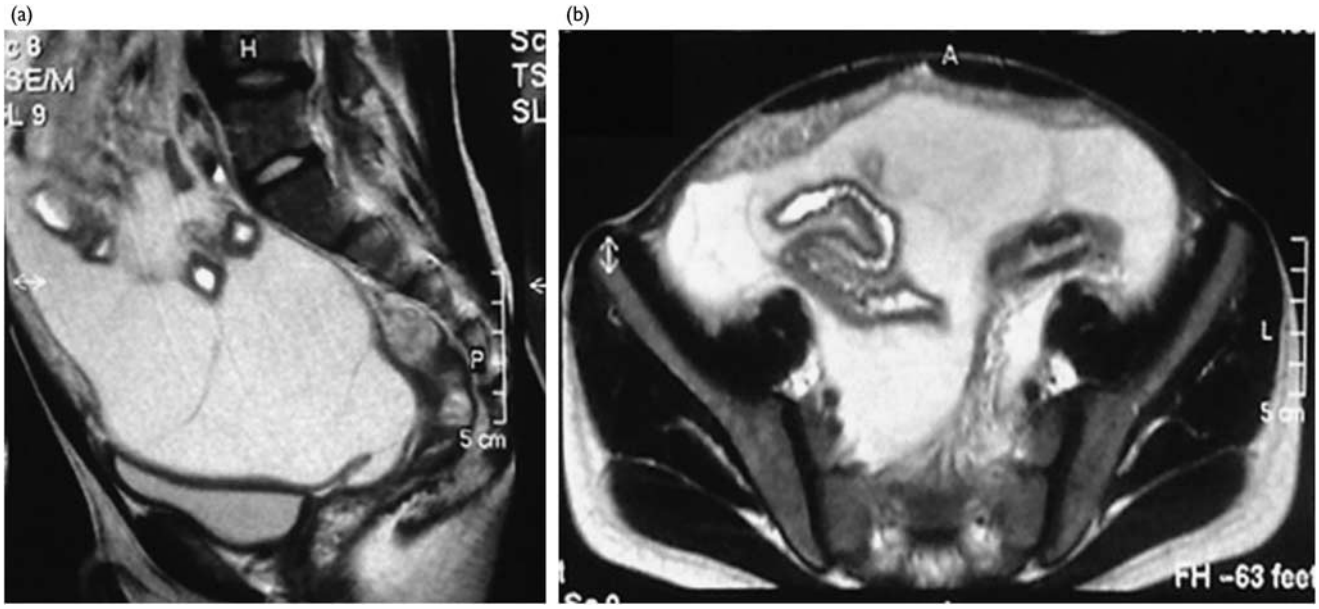
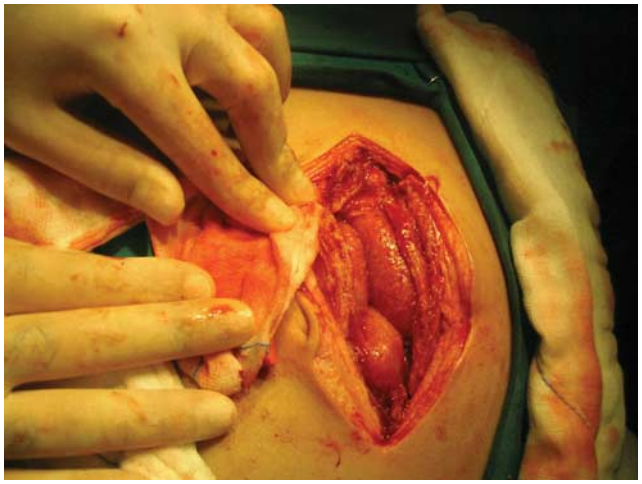
Fig. 2



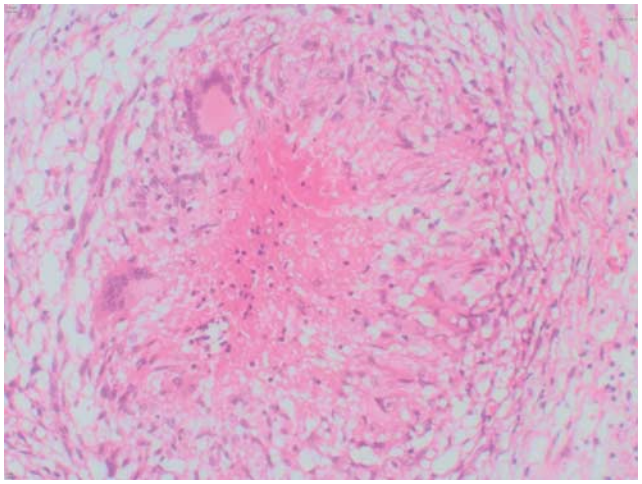
Pelvic MRI showing pelvic free fluid with septations (a) sagittal and (b) transverse T2W image.

Fig. 3



Millimetric, punctuate white nodules on the intestine, omentum, and peritoneum that show dense adhesion to each other and to the abdominal wall.

Fig. 4



A Langhans-type giant cell is seen within the granuloma structure consisting of foamy histiocytes with caseification necrosis in the middle. HE, × 200.

the whole abdomen especially at the pelvic level and surrounding the intestinal loops. They were hypointense on T1-weighted images and hyperintense on T2-weighted images. These areas had fine septations on T2-weighted images but there was no significant wall thickening in the intestinal loops or any lymph node of pathological size. The radiology department thought that these findings were consistent with cystic lymphangioma; less probable diagnoses were cystic teratoma and cystic peritoneal mesothelioma (Fig. 2). Routine blood tests showed white blood cell 8000/mm^3, hemoglobin 10.6 g/dl, C-reactive protein (CRP) 196 mg/l, and erythrocyte sedimentation rate 31 mm/h. The biochemical levels were normal. The patient was taken to surgery on a preliminary diagnosis of an intra-abdominal mass. At surgery, the tissues from the subcutaneous tissues to the peritoneum were seen to be quite edematous. The peritoneum was about 10 mm thick and it was adherent to the inflamed, edematous, thickened small intestines, and omentum beneath. The intra-abdominal area contained ascitic fluid divided by septae. There were millimetric punctate white nodules (granulomas) with a miliary distribution on the intestines, omentum, and peritoneum (Fig. 3). Abdominal tuberculosis was considered and the operation ended after a peritoneal biopsy, and ascites fluid samples were taken. The patient was put on triple antituberculosis treatment with INH + morphazinamide + rifampicin. Histopathological evaluation of the omentum and peritoneum biopsies showed a caseous granulomatous inflammation with Langhans-type giant

cells within a granuloma structure composed of foamy histiocytes and with caseification necrosis in the middle (Fig. 4). Intra-abdominal fluid revealed the presence of the *Mycobacterium tuberculosis* complex, whereas the PCR, anti-HIV antibody, and tuberculin skin test results were negative. Thoracic and abdominal computerized tomography (CT) results were obtained. Thoracic CT was normal. The abdominal ultrasonography (US) findings resolved completely after the third week of antituberculosis treatment and the treatment was carried out for 6 months. The patient showed no complications on further follow-up.

Discussion

Tuberculosis is thought to be under control in many countries, but the increase in HIV-infected patients continues to be a critical problem. Abdominal tuberculosis is a rare disorder that constitutes 10% of these cases [1]. Abdominal tuberculosis develops with the reactivation of a quiet focus. The disease develops by lymphohematogenous spread from the pulmonary focus or by swallowing the bacilli. The most common type of abdominal tuberculosis is intra-abdominal lymphadenopathy, whereas the disorder can involve the gastrointestinal tract, peritoneum, omentum, solid organs, and genitourinary systems separately or in combination [1,2].

Generally, tuberculosis is seen more rarely during adolescence than during other ages [3]. Abdominal involvement is rare in children and it is primarily thought of as a young adult disease. It can present with different clinical features in adults compared with children, and it can be difficult to make a diagnosis of abdominal tuberculosis. Abdominal tuberculosis can present with various clinical features. Patients have been diagnosed with lymphoma, mesothelioma, appendiceal mass, or inflammatory bowel disease. Intestinal symptoms can be prominent (pain, vomiting, gas distension, diarrhea, or constipation), whereas some patients can be incidentally diagnosed with calcification on a radiograph. Some of the patients can present with perianal fistulae. The history is positive for weight loss, fever, and night sweats.

Radiologically, nonspecific free fluid and increased mesenteric echo in the acute stage with peritoneal involvement were seen. The chronic peritoneal stage shows a thickened peritoneum, surface nodularity, and adhesions with a septated complicated collection. Mesenteric lymphadenopathies can create stellate lesions or a confluent mass. Peritoneal involvement can be in the form of diffuse or nodular thickening and can be confused with peritoneal carcinomatosis when they sometimes create an omental cake. US is the best way to show septated ascites. The presence of many mobile septae and debris-containing loculated ascites should bring to mind tuberculosis peritonitis in the differential diagnosis. US is also valuable in evaluating lymphadenopathies in children. CT shows the peritoneal thickening, the mesenteric and peripancreatic lymphadenopathy with necrotic centers, and omental cake development as well. The use of these two methods together is complementary and helpful for peritoneal biopsy. The protein content of tuberculosis ascites is high; hence, the MRI levels show the lesions as hyperintense compared with water in T1 series [4].

Some patients can be diagnosed only perioperatively. Our patient had occasional abdominal pain and more significantly abdominal swelling. The laboratory and imaging tests led to a diagnosis of intra-abdominal mass with lymphangioma or mesothelioma as the preliminary diagnosis. Our patient was finally operated upon on the basis of a preliminary diagnosis of an intra-abdominal mass. The presence of peritoneal, omental, and intestinal edema, thickening, adhesion to each other and to the abdominal wall, intra-abdominal ascites, and the presence of a white nodular structure on these organs indicated abdominal tuberculosis. This enabled starting medical treatment in the early postoperative period before the pathology result was obtained. The peritoneum, intestinal loops, and omentum showed findings of the disease, whereas there was no marked abdominal lymphadenopathy, in contrast to the literature [2].

Adult patients in whom abdominal tuberculosis is considered can undergo laparoscopy and peritoneal biopsy safely and with low complication rates, but surgery is usually performed for patients with complications such as intestinal obstruction, fistulization, perforation, and stricture. The inadequate clinical and laboratory findings for diagnosis in children can lead to them being operated upon on the basis of other diagnoses, receiving the correct diagnosis only after the surgical biopsy.

Showing the tubercular bacilli in culture or demonstrating the alcohol–acid-resistant bacilli or caseous granuloma histologically is diagnostic. However, demonstrating the alcohol–acid-resistant bacilli is possible only in 20–70% of the cases [5,6]. A negative intradermal reaction does not exclude the diagnosis. The Mantoux test has been found to be positive in 50–78% of patients with abdominal tuberculosis [7]. Empirical treatment can be started in cases of clinical suspicion as the diagnosis can be difficult. CT is more sensitive than US as a diagnostic technique [8]. Radiologists should be suspicious for abdominal tuberculosis in order to facilitate the planning of the investigations and treatment by the clinician, especially in developing countries and in immunosuppressed children.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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