

Childhood abdominal tuberculosis

The role of echo-guided fine-needle aspiration in its management

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Abstract. Two children presented with abdominal tuberculosis. Because of the nonspecific clinical features, the diagnosis required a high index of clinical suspicion. Fine-needle aspiration (FNA) under ultrasonographic guidance allowed an early definitive diagnosis and bacteriological confirmation to guide chemotherapy. Both patients responded well to antituberculous chemotherapy.

Key words: Childhood abdominal tuberculosis – Fine-needle aspiration – Interventional ultrasound

Childhood abdominal tuberculosis is uncommon in developed countries except among immigrants from endemic areas. With increasing numbers of immigrants coming from developing countries, more cases of abdominal tuberculosis may be seen in affluent countries. The low incidence of this condition combined with the nonspecificity and variability in clinical manifestations may lead to a delayed or missed diagnosis with high morbidity and even mortality. However, with early diagnosis and appropriate treatment, the prognosis is often excellent. This paper reports two recently identified children with abdominal tuberculosis. Diagnosis with FNA under sonographic guidance allowed early treatment with subsequent complete recovery

Case reports

Case 1

A 1-year-and-3-months-old Vietnamese girl presented with a 3-month history of intermittent fever, weight loss, poor appetite, nonbilious vomiting, and several episodes of blood-stained diarrhea. Physical examination revealed that she was pale, febrile, and malnourished. The abdomen was mildly distended. There was no other significant finding. Blood tests included a hemoglobin of 9.3 g/dl, a leucocyte count of $20.8 \times 10^9/l$ and an erythrocyte sedimentation rate of 53 mm/h. Plain abdominal radiograph was normal but the chest X-ray showed an opacity in the right upper zone. Stools were negative for viral and parasitic studies. Both the sputum and gastric aspirates were negative for acid-fast bacilli. Mantoux test was mildly positive (area of induration less than 5 mm). Ultrasound of the abdomen showed thickened bowel wall (Fig. 1) and multiple lymph nodes over the right iliac fossa (Fig. 2). Under sedation with diazepam (0.3 mg/kg body weight) and pethidine (1 mg/kg), FNA of the lymph nodes under sonographic guidance was performed (Fig. 3). The aspirate was positive for acid-fast bacilli. A 6-month course of chemotherapy including streptomycin, isoniazid, rifampicin, and pyrazinamide was given with excellent response.

Case 2

A 1½-year-old Vietnamese girl presented with a 2-month history of intermittent fever, poor appetite, weight loss, pallor, and abdominal distension. Bowel habit was normal. On examination, she was anemic and in a poor general state. The abdomen was slightly distended. There was a mass of about 3 cm in diameter over the right iliac fossa. Other systems were unremarkable. Blood tests revealed a hemoglobin of 7.7 g/dl, a leucocyte count of $12.5 \times 10^9/l$, and an erythrocyte sedimentation rate of 102 mm/h. Stool for occult blood was positive. Plain abdominal and chest radiographs were unremarkable. Mantoux test was mildly positive. The clinical features were compatible with the diagnosis of either intestinal lymphoma or tuberculosis. Small-bowel enema showed transient holdup at the terminal ileum but was otherwise normal. Ultrasound of the abdomen showed thickened bowel wall and multiple lymph nodes over the right iliac fossa. FNA of the lymph nodes under sonographic guidance was performed. Ziehl-Nielsen stain confirmed the presence of acid-fast

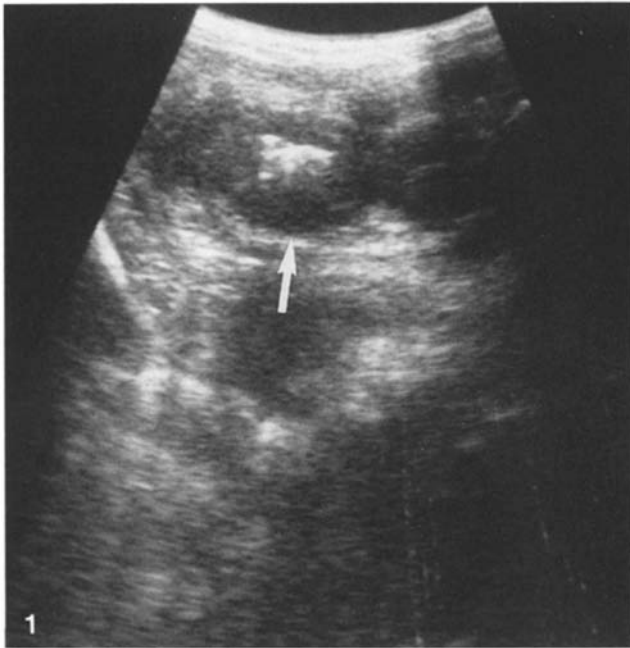


Fig. 1. Abdominal ultrasound showing thickened bowel wall (*arrow*).



Fig. 2. Abdominal ultrasound showing multiple mesenteric lymph nodes (*arrow*).

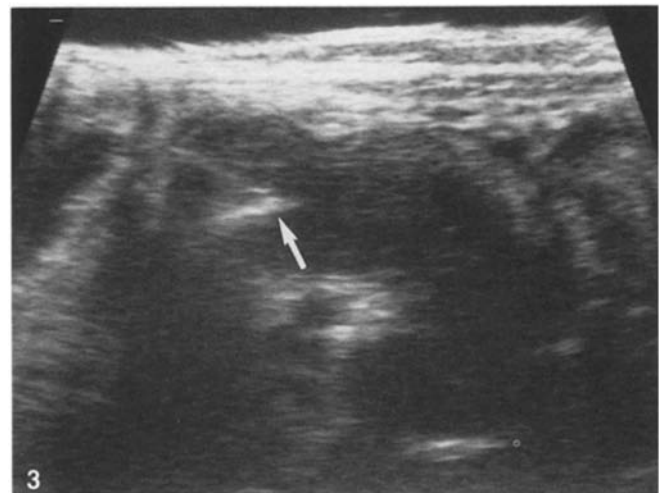


Fig. 3. Echoguided FNA of mesenteric lymph node with the *arrow* indicating the needle.

bacilli. A course of chemotherapy including streptomycin, isoniazid, rifampicin, and pyrazinamide was given for 6 months with complete symptomatic response.

Discussion

Childhood abdominal tuberculosis is relatively rare in developed countries except among the immigrant population from endemic areas [3]. With the increasing number of immigrants coming from developing countries, more cases of abdominal tuberculosis may be encountered in affluent countries. The two reported cases were Vietnamese children. They were both in a poor nutritional state which may either indicate a population at risk or the effects of a debilitating disease.

Because of the often nonspecific clinical features and the variable manifestations, abdominal tuberculosis is a mimicker of many diseases, such as gut lymphoma, hepatic cirrhosis, and inflammatory and infectious bowel disease [10, 15]. The clinical features of the reported patients were suggestive of gut lymphoma, abdominal tuberculosis, or infectious bowel disease. Abdominal tuberculosis may be associated with extra-

abdominal disease but in some cases it may not be associated with clinically apparent tuberculosis elsewhere, thus creating more diagnostic difficulty [8]. Apart from case 1 where the chest radiograph showed an abnormal opacity supportive of possible tuberculosis, there was no clinically apparent extraabdominal tuberculosis. Unlike the more common pulmonary tuberculosis, diagnosis of abdominal disease is seldom established with simple investigations such as radiological studies or microbiological examination of secretata/excreta [13]. Tuberculin testing is usually of limited value [12]. Patients with active pulmonary tuberculosis usually have a strong positive skin test, but a large proportion of patients with abdominal tuberculosis have a mildly positive test compatible with past history of tuberculosis or BCG vaccination. Hence the diagnosis of childhood abdominal tuberculosis may be difficult and is often initially overlooked, leading to increased morbidity and even mortality [4, 8, 11]. Even in areas where the disease is prevalent, a correct clinical diagnosis is made in only one-half of the cases [4]. A high index of clinical suspicion is often required, especially among those children coming from endemic areas presenting with abdominal symptoms and evidence of malnutrition [11].

Abdominal tuberculosis is a mimicker of many diseases. To embark on antituberculosis treatment without a firm diagnosis condemns the patient to either a protracted, unnecessary course of treatment or to a delay in the true diagnosis [19]. Thus a firm pathological diagnosis is essential and a bacteriological study to guide the appropriate chemotherapy is necessary. Once the diagnosis is confirmed and antituberculosis therapy is commenced early in the course of the disease, the prognosis is usually excellent [6, 11, 12]. The two reported patients responded well to chemotherapy. On the contrary, to diagnose a child with abdominal tuberculosis incorrectly as inflammatory bowel disease may have serious consequences since steroid therapy may then risk miliary dissemination.

To achieve a firm diagnosis of abdominal tuberculosis, one can resort to various means. Diagnostic laparotomy is often required [3, 10]. However, it can be difficult, due to the thickened edematous peritoneum and the adherent bowel loops. For similar reasons, laparoscopy may be difficult [20]. Colonoscopy has been used in the enteric form of abdominal tuberculosis [18]. Diagnosis by culture of ascitic fluid obtained via paracentesis is often unreliable and may give a false-negative result [3, 20]. Blind percutaneous needle biopsy of the peritoneum also yields a variable success rate [9, 16]. FNA of hepatic and peritoneal lesions under computed tomographic guidance has been used in the diagnosis of abdominal tuberculosis with success [5]. Our experience with FNA of peritoneal lymph nodes under sonographic guidance confirms its usefulness in the diagnosis of abdominal tuberculosis. The technique used for percutaneous FNA has been previously described in the literature [1]. FNA was performed with real-time ultrasonographic guidance that allowed the tip of the needle to be followed into the target lesion. The use of percutaneous abdominal fine-needle biopsy under imaging guidance has proved to be an extremely useful diagnostic aid with a very low complication rate [2, 7, 17]. Further, it has been shown to shorten the hospital stay, decrease the need for more invasive procedures including anesthesia and laparotomy, and decrease considerably the cost of hospitalization [14].

In conclusion, since childhood abdominal tuberculosis is a relatively rare disease in developed countries and has protean manifestations, its diagnosis is often difficult and delayed, leading to increased morbidity and even mortality. Since there should be a high index of clinical suspicion among the at-risk group, i.e., those children from endemic areas presenting with abdominal symptoms and evidence of malnutrition, echo-guided

FNA allows an early definitive diagnosis and appropriate treatment, usually resulting in an excellent outcome.

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