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Report of Two Cases of Gastrointestinal Tuberculosis

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ABSTRACT

Despite extensive preventive efforts and access to effective drugs and vaccines, tuberculosis still remains an important health problem around the world. Tuberculosis bacteria can infect the gastrointestinal tract through the primary foci of infection in the lungs via the mesenteric lymph nodes or directly through the blood or lymph. Due to non-specific clinical symptoms, early peritonitis is diagnosed with a delay. The lack of specific biological and radiographic markers and the long history of bacterial culture make the diagnosis of peritonitis difficult. In this study, two cases of abdominal involvement with clinical symptoms of acute abdominal pain, nausea, vomiting, sweating, and severe weight loss were reported.

Keywords: Vaccine, Extra pulmonary tuberculosis, Gastrointestinal tract

Introduction

According to the latest World Health Organization (WHO) reports, approximately 25% of the world population is infected with *M. tuberculosis* (1). In 2017, 10 million people were infected and 1.6 million died from tuberculosis. Weakened immune system and prolonged exposure to infected people are the most important risk factors for tuberculosis. Abdominal tuberculosis involves the gastrointestinal tract, peritoneum, lymph nodes, liver, spleen, kidneys, ovaries, pancreas, and more. Abdominal tuberculosis accounts for 5% of all cases of tuberculosis in the world (2, 3). Liver cirrhosis, HIV infection, diabetes, malignancy, and treatment with anti-TNF-α drugs are among the most important risk factors for the spread of abdominal tuberculosis, however, in 20% of cases no risk factors have been identified (4). Peritonitis mainly occurs following recurrence of latent tuberculosis infection or due to the spread of bacteria from blood in active pulmonary infection or miliary TB (5).

Ascites (93 %), pain (73 %), and fever (58 %) are the most important clinical manifestations of tuberculous peritonitis, which can affect the patient for weeks (4). It is very difficult to diagnose peritonitis due to its non-specific and variable symptoms and subclinical nature of the disease. Diagnosis is usually based on microbiological culture, calculation of SAAG (albumin concentration of serum) - (albumin concentration of ascitic fluid), peritoneal biopsy, laparoscopy and mini laparotomy. The findings of chest x-ray, ultrasound (US) and computed tomography (CT) can also be useful in diagnosing abdominal involvements. Studies have shown that CT findings are more helpful than Chest x-rays, especially when combined with US findings (6).

Case Report

Case Report 1

A 24-year-old girl, without a history of pregnancy, a resident of Ardabil, with an initial complaint of dilatation, acute abdominal pain especially in the lower right quadrant and suprapubic region, was referred to the emergency department of Fatemi Hospital. The patient's symptoms started 7 days previously accompanied by nausea and vomiting. The patient had no history of previous illness or a positive family historyShe also did not have cough, sweating, or weight loss indicating evidence of pulmonary tuberculosis. In addition, the

patient did not report a history of past intestinal obstruction, diarrhea or constipation, urgency, and dysuria.

Upon arrival, the patient's vital signs were BP: 110/70 and PR: 115. Examination of the pulmonary and cardiovascular organs indicated normal conditions, and abdominal examination showed abdominal distension. The laboratory test results were as follows: WBC: 6100, RBC: 4.72, HGB: 11.4, HCT: 36, MCV: 76.27, MCH: 24.15, MCHC: 31.67, PLT: 366000, and negative gravid index test was reported. On abdominal pelvic ultrasound, a 39.39-mm cyst was seen in the left adnexa, which contained numerous internal echoes in the form of fine septa representing hemorrhagic cysts. Also, free fluid over 1.5 liters was seen in the abdomen and pelvis (Figure 1).

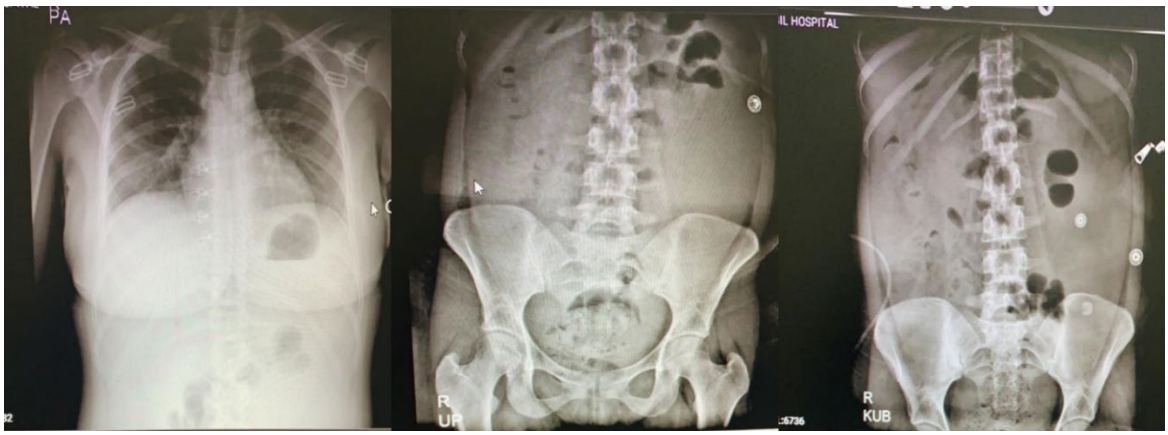

Figure 1. Radiographic features of abdomen and pelvis before treatment

There was no evidence in favor of typical acute appendicitis.The patient was referred to women's ward. Based on ultrasound results, sustainable vital signs and lack of any bleeding evidence, the patient underwent laparotomy. Extensive adhesions, enlargement of left ovary, and tubular abscess were seen in laparotomy.

The patient underwent appendectomy and a peritoneal sample was prepared. Fluid was also sampled. After the operation, due to extensive seeding and adhesions, differential diagnoses of tuberculosis, malignancy, and pelvic inflammatory disease were made. According to the infectious disease physician, the treatment was not carried out until the results of the pathology and acid-base tests were obtained.

To find the source of ascites, the patients received internal counseling, Echocardiography, PPD test and ultrasound were requested for the patient. In echocardiography no vegetation and EF = 60% were reported. Laboratory data were normal. Also, the ultrasound reported a small amount of fluid in the lower right quadrant, which was not tapable.

In PPD test, diameter of induration was over 20 mm. A few days after the surgery, the patient had fever (over 39 degrees celsius) and the WBC count was 11,600/µl. Due to these symptoms, the patient was admitted to the infectious department of Imam Khomeini Hospital. Because of fever, seeding, and PPD test results, anti-tuberculosis medication was ordered. At this time, the patient still had a small amount of non tapable fluid in the ultrasound. Also, according to laboratory data, the patient was anemic and had decreased urea and a slight increase in liver profile. The fluid was also reported to be negative for acid-fast bacilli stain.

List of drug prescription is presented in Table 1.

Table 1. List of drug prescription

Drug	Dosage	
Isoniazid	300 mg tablets	one fasting daily
Ethambutol	400 mg tablets	two and a half tablets, once a day
Rifampin capsule	300 mg	one a day
Pyrazinamide	1500 mg tablets	one a day
Vitamin B	640 mg	one a day

Drug	Dosage	
Prednisolone	50 mg tablets	one a day
Streptomycin ampoule	1 g	daily
Ranitidine	150 mg tablets	daily
Acetaminophen	325 mg tablets	daily

After five days of follow-up, the patient was cleared of abdominal pain, fever, and general malaise. The patient was advised to visit the infectious disease clinic a month later with a pathological response.

Case Report 2

The patient, a 16-year-old girl, was referred to the hospital with diarrhea and abdominal pain.

In most cases, the patient's diarrhea was bloodless and occurred immediately after eating. Diarrhea with abdominal pain was widespread and worsened during defecation and was relieved after defecation. The stool volume of diarrhea varied, but was usually not large. Abdominal pain occurred at night during sleep and caused wakening but was resolved after diarrhea. The patient also complained of nausea, loss of appetite, significant weight loss (more than 5% of body weight) for 5 months before hospitalization.

The patient had no history of allergies to certain drugs, no history of specific disease other than kidney stones, and no specific family history. On examination, her vital signs were stable without fever (PR = 80, BT = 36.7C, BP = 100/70, RR = 16). Abdominal pain was associated with mild epigastric tenderness and lower abdominal pain. There were no specific signs on examination of other parts.

CT scan of the chest showed no signs of mediastinal or Hilar lymphadenopathy. Parietal and visceral nodular thickening was evident predominantly in the basal regions of the right lung. Tubular turbidity was seen at the base of the right lung with a cystic appearance. A 15- mm nodule was evident in the anterior spleen.

Material sections of peritoneal tissue showed chronic inflammation with PMNs infiltration, congestion of blood vessels and a few granulomas with central necrosis in two larger granulomas. Smear showed hemorrhagic and hyper cellular background, many lymphocytes, some mesothelial cells, PMNs and macrophages. Peritoneal biopsy was consistent with necrotizing granulomatous inflammation. Laboratory tests finding are listed in Table 2.

Table 2. Laboratory Tests Findings

ITEM	
WBC	6000(PMN55%)
Hb	13.8
Hct	44.2
PlT	234000
urea	26
Cr	0.8
ALT	8
AST	14
Na	191
K	9.6
BS	97
ALP	181
ESR	5
TSH	1.1
U/A	normal
S/E	normal
S/C	Negative
ANA	9.3(>10 positive)

Abdominal and pelvic ultrasound showed no abnormalities. Anti-TTG IgA and IgA total serum and TSH tests were performed along with colonoscopy. The tests were normal, and in colonoscopy, prominent internal hemorrhoids with a normal colon were reported and a biopsy from the descending colon and terminal ileum was performed.

In pathology finding, severe lymphoid hyperplasia in terminal ileum was seen, and abundant acid-base bacilli were obtained by Ziehl-Neelsen staining of the tissue. In the following examination, a PPD test was performed (induration diameter: 22mm). Treatment

with four drugs with pyridoxine was started for the patient.

Discussion

According to the World Health Organization, tuberculosis is one of the 10 deadliest diseases in the world. Although lung involvement is the most important feature of tuberculosis, the incidence of extrapulmonary tuberculosis especially in immunocompromised patients is high (7).

Extrapulmonary tuberculosis accounts for 20% of tuberculosis cases, and abdominal tuberculosis is responsible for approximately 10% of extrapulmonary tuberculosis cases. Epidemiological studies have shown that abdominal tuberculosis is mainly seen in people aged 35-45(8). Abdominal tuberculosis (TB) as a type of tuberculosis**,** primarily affects the gut, the peritoneum, gastric lymph nodes, and, in some rare cases, the solid viscera in the abdomen including liver, pancreas, and spleen may be involved. Abdominal tuberculosis can be transmitted through several routes including consumption of infected materials such as infected food,and milk even infected sputum and also via hematogenous and lymphatic dissemination(9).

Risk factors include weakened immune systems, renal failure, cirrhosis, and malnutrition. *Mycobacterium tuberculosis* can affect any part of the gastrointestinal tract, but the most affected areas are the peritoneum, intestine and liver. Gastrointestinal tuberculosis can be caused by reactivation or latent infection, also, bacteria can enter the body through the consumption of contaminated foodsuch as unpasteurized dairy products or undercooked meat (10).

Abdominal pain, weight loss, anemia, fever, night sweats, and diarrhea are clinical signs of gastrointestinal tuberculosis, which in some cases, can be accompanied by hemorrhoids and perforation. Although many diagnostic methods have been defined for abdominal tuberculosis, none has demonstrated clinically complete sensitivity and specificity (3, 11). In the lack of early detection and appropriate treatment, intestinal obstruction, fistula , abscess and perforation may occur.Tuberculin skin testing (TST) and interferon gamma release assay (IGRA) are usually positive in cases of gastrointestinal tuberculosis, however, false negatives results have been reported(12, 13).Smear microscopy, mycobacterial culture and histologic examination should be performed in all cases of suspected TB infection. However, their utility in diagnosis has low yield. Due to such limitations, PCR testing of extra pulmonary samples is recommended. Also, measurement of Activity of ascitic fluid adenosine deaminase (ADA) may be useful for early screening. Although clinical presentation, laboratory testing, peritoneal fluid testing, and imaging may provide a strong suspicion for abdominal TB, laparoscopy for diagnostic confirmation is recommended (5, 14, 15).

In acute cases, surgery is recommended, but gastrointestinal tuberculosis responds well to drug treatment. Therefore, early diagnosis of infection will be very effective in preventing surgical intervention (6, 13).

Conclusion

Compared to pulmonary tuberculosis, the prevalence of gastrointestinal tuberculosis is low. However, in many cases clinical presentation may be similar to other diseases making the diagnosis elusive. Therefore, application of various diagnostic tools such as radiological, molecular and immunological techniques for differential diagnosis seems necessary. aThe most common medication for gastrointestinal tuberculosis is antimicrobial therapy in which rifampicin, isoniazid, pyrazinamide, and ethambutol are prescribed for two months followed by rifampicin plus isoniazid for at least six months. However, in complicated cases surgery and endoscopic intervention are recommended.

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None.

Conflict of Interest

There are no conflicts of interest.

Patient consent

In this study, for each case report a form containing patient's consent was prepared and the patients were assured that their personal information would not be published and only clinical and therapeutic data would be reported.

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