

A Case with Multiple Localizations of Tuberculosis Infection

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Abstract

Diagnosis of extrapulmonary tuberculosis (TB) is often difficult. A case with diagnosis of abdominal and possible cranial, mediastinal, pulmonary and ovarian TB was treated with combined chemotherapy of streptomycin, ethambutol, rifampin, and pyrazinamide. She made a good recovery with almost complete resolution of the radiographic appearances after a six-month therapy. Diagnosis of extrapulmonary TB can be easily missed unless the disease is suspected. Solid lesions in multiple localizations, especially those imitating tumor metastasis, must alert clinicians to extrapulmonary TB.

Keywords: extrapulmonary tuberculosis, granulomatous inflammation, tuberculoma

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INTRODUCTION

The incidence of tuberculosis (TB) disease in Turkey in 2000 was 27/100,000 [12]. Tuberculosis may involve not only lungs but also other tissue and organs by three mechanisms: infective sputum material forming lesions in airways and gastrointestinal system, dissemination of infection from a nearby focus and lympho-hematogenic dissemination [13].

Extrapulmonary manifestation of TB is increasing in incidence, and its diagnosis is often difficult. Abdominal TB may mimic a variety of gastrointestinal and genitourinary disorders such as ileocecal or ovarian mass, and intracranial tuberculoma may imitate both clinically and radiologically the more commonly observed intracranial tumors [1].

This case report outlines the extrapulmonary manifestation of TB concurrently imitating other disorders of the cranium, ovary, gastrointestinal system and mediastinum.

CASE PRESENTATION

A 17-year-old girl admitted to the hospital with abdominal pain, general malaise, weakness, intermittent low grade fever, nonproductive cough, attacks of grand mal epilepsy, swollen lesion on her right parietal cranium and amenorrhea. She had been treated with sodium valproate

(20 mg/kg/day) for one year for her generalized convulsions. Her abdominal pain began six months ago with general malaise, weakness, and swelling of her right parietal cranium. After undergoing exploratory pelvic surgery with laparoscopic adhesiolysis six months ago with a suspicion of appendices peritonitis, general adhesions in the abdomen were revealed. Since the same abdominal pain persisted, this procedure was performed again in an attempt to diagnose the cause of vague abdominal discomfort. The microscopic examination of peritoneum, omentum, and intestine revealed granulomatous inflammation as an evidence of TB. Just after the surgery, she began to suffer non-productive cough and was directed to our center without any treatment.

She was admitted to the hospital with an evidence of abdominal TB, suspicious intra- or extracranial mass and a nonproductive cough. She had never smoked and had no drug or substance abuse. The patient was a thin pale white girl having a tachycardia of 120 pulse/min. Her blood pressure was 80/60, temperature was normal, and weight was 37 kg. The auscultation of the lungs was normal. The swollen lesion on her parietal cranium was

2 cm in diameter. Her physical examination for other organs was normal.

The erythrocyte sedimentation rate was 78 mm per hour, while serum white cell count was 14,800 with a low hematocrit level of 30%. The other blood parameters were normal. Electrocardiography was normal except for sinus tachycardia.

The initial chest radiography was interpreted as suggesting mediastinal enlargement (Figure 1). Thorax computerized tomography (CT) showed mediastinal, pre- and paratracheal, carinal, subcarinal and right hilar (having central necrosis) lymphadenopathy, and acinar consolidation on superior segment of right lower lobe (Figures 2, 3).

Splenomegaly, dilatation of intestine, air-fluid levels in large intestine and localized thickening of small intestine in abdominal CT were considered as intestinal lymphoma (Figure 4).

Cranial CT revealed soft tissue mass causing destruction on right parietal bone and also extending to intracra-

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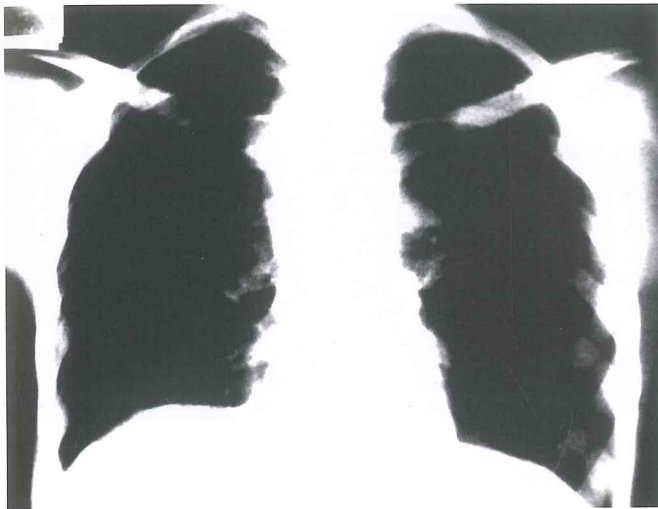


Figure 1. Mediastinal enlargement in chest radiography.

nial area. This lesion was evaluated as a metastasis by the radiologist (Figure 5). Ultrasonography revealed a 5.3x3.6 cm solid mass in right adnexa and 5.8x3.3 cm solid mass in left adnexa.

Sputum and urine specimen microscopy and culture for *Mycobacterium tuberculosis* were negative. Fine needle aspiration biopsy specimen of the swollen lesion on parietal cranium revealed evidence of necrotic substance confirming an infection, possibly TB.

With the diagnosis of abdominal and possible cranial, ovarian, mediastinal, and pulmonary TB, combined chemotherapy of streptomycin, ethambutol, rifampin, and pyrazinamide was started. At first and sixth months of treatment, chest radiography, and abdominal, thoracic, and cranium CT showed marked regression in all lesions. She made a good recovery and a follow-up chest radiograph showed resolution of the parenchymal consolidation. After six months of tuberculosis treatment, the patient remained well, with almost complete resolution of all the radiographic appearances.

DISCUSSION

In the international arena, TB is the leading cause of morbidity and mortality. The proportion of extrapulmonary TB in the United States remained fairly constant from 1977 to 1981. However, during the subsequent years, as pulmonary TB declined at a faster rate than extrapulmonary TB, the proportion of extrapulmonary TB has gradually risen [2]. Mehta et al. reported extrapulmonary TB as 11.3% of total TB cases, while 17.5% was reported by Rieder et al. and 8.4% by Glassroth et al. [2,3,4]. Extrapulmonary TB is reported at similar rates (10-18%) in Turkey [1].

The failure of extrapulmonary TB to decline at the same rate as pulmonary TB has been noted before. Pos-

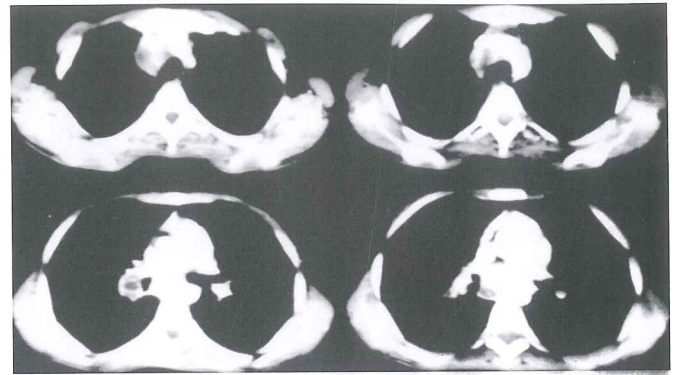


Figure 2. Mediastinal lymphadenopathies and right hilar lymphadenopathy containing central necrosis.

sible explanations have included: 1- increased recognition/reporting, 2- overdiagnosis, 3- actual failure to decline, and 4- a combination of these factors [3].

The mean age of the cases was reported as 37.9 years in Turkey [1]. Contrary to rates in the literature, our case was 17 years old.

Mehta et al. reported the majority of extrapulmonary diseases occurred in pleura, lymph nodes, and bone/joints. The total number of extrapulmonary TB cases could steadily increase with age, but miliary, lymphatic, and meningitis TB were frequently the only sites in children [2]. Results in Turkish patients are similar to those, with frequent TB disease of pleura (59%) and lymph nodes (21%). In the literature, there are many studies reporting the rates of involvement in extrapulmonary TB disease, but to our knowledge there is no previously reported case that had such multiple localizations as in the present case.

Mehta et al. found a sex predominance in the peritoneal and genitourinary sites for women and in pleural sites for men, the reason for which was not clear. These sites of TB involvement usually imply new infection [2].

Central nervous system TB takes various forms, including meningitis, tuberculoma, abscess, cerebritis, and miliary TB [5]. Intracranial tuberculomas may imitate, both clinically and radiologically, the more commonly observed intracranial tumors [6]. In most cases, conservative therapy provides good or excellent results [7]. Our case suffered from a swollen lesion at right parietal cranium, diagnosed as abscess of TB by needle aspiration biopsy. After an initial antituberculous therapy, abscess showed a regression both clinically and radiologically. Prior to diagnosis, however, this cranial lesion was misdiagnosed as a metastasis when the cranial tomography was interpreted. In developing nations, tuberculoma may account for 5% to 30% of all intracranial masses [8]. The diagnosis of extrapulmonary TB, including neurotuberculosis, is difficult because of the low yield of culture positivity for *Mycobacterium tuberculosis*.

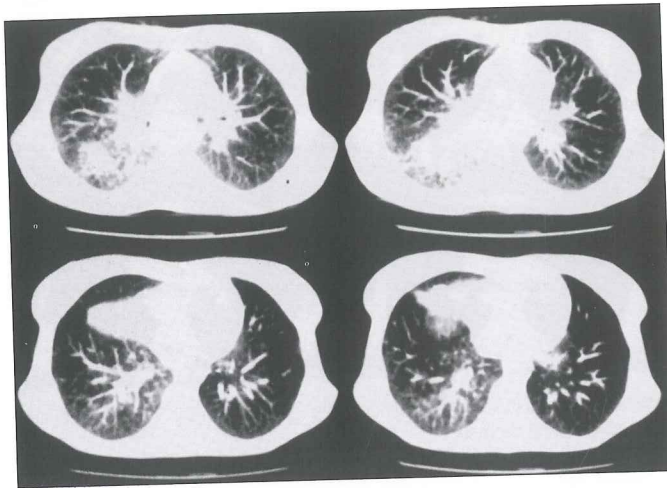


Figure 3. Acinar consolidation at superior segment of right lower lobe in thoracic CT.

Serodiagnosis has emerged as a useful aid in the diagnosis of extrapulmonary TB. Testing for anti-mycobacterium antibodies to A-60 antigen is a useful adjunct in the diagnosis of extrapulmonary TB, especially neurotuberculosis. [9]. Since abdominal TB imitates many abdominal diseases, diagnosis can be easily missed unless the disease is suspected [10]. Similarly, the findings of abdominal CT in our case first directed us to intestinal lymphoma. Laparoscopic and percutaneous aspiration procedures are useful for diagnosis in the select cases of intestinal and peritoneal TB. Laparotomy should be performed only when complication develops or diagnosis is uncertain. Extensive resection should be avoided in surgical treatment of intestinal TB. Early diagnosis and treatment will decrease the complications that can develop during the progress of the disease and consequently the mortality rates [10]. Our case had exploratory pelvic surgery twice. The first was primarily because of a suspicion of appendices peritonitis and the second was performed to diagnose persistent abdominal pain. These procedures concluded with granulomatous inflammation in peritoneum, omentum and intestine as an evidence of TB.

Jahromi et al. [11] reported 46 women (mean age: 30.4 years) having genital TB in a total of 3088 cases of TB. Seven patients presented with abdominal or pelvic pain (17.07%). In this group, three cases underwent laparotomy due to abdominal mass and four patients for tuba-ovarian abscess, which led to the diagnosis. However, in 31 cases (75.6%), TB was diagnosed during studies performed to evaluate the cause of their infertility. Female genital TB accounted for 1.32% of all tuberculous patients in this study. This study confirms the presence of a strong relationship between genital TB and infertility; therefore, genital TB would be more frequently diagnosed

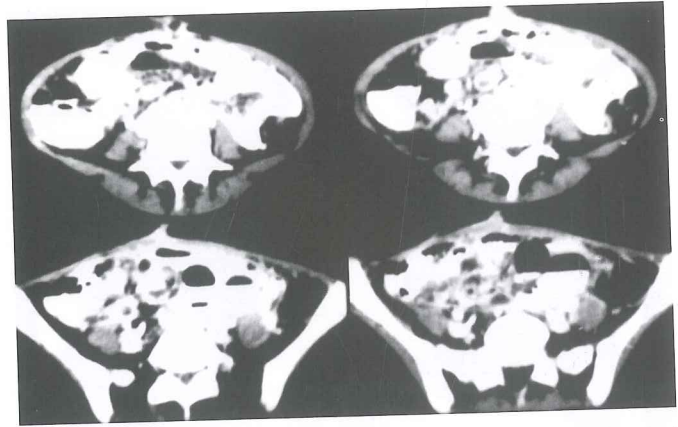


Figure 4. Dilatation of intestine, air-fluid levels in large intestine and localized thickening of small intestine in abdominal CT.

if this possibility was considered in the evaluation of every infertile patient in areas where TB is endemic. In our case there were solid masses in both adnexa in ultrasonography. Although we have no histopathologic proof, obvious regression after TB chemotherapy confirmed the TB lesions in the adnexa.

Tuberculosis imitates a variety of disorders. The diagnosis of extrapulmonary TB is difficult because of the low yield of culture positivity for *Mycobacterium tuberculosis*. Diagnosis can be easily missed unless the disease is suspected. Solid lesions in multiple localizations, especially those imitating tumor metastases, must alert clinicians to extrapulmonary TB.

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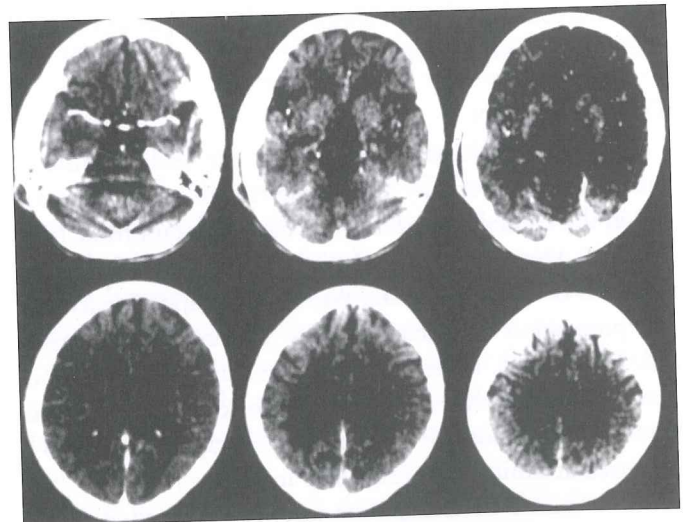


Figure 5. Soft tissue mass causing destruction on right parietal bone.

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