

# Intrathoracic and Intraabdominal Tuberculosis Lymphadenitis without Lung Involvement in an Immunocompetent Patient

Qiyuan Dai<sup>1,\*</sup>, Jia Qin<sup>2</sup>, Mohamed Abdulla<sup>3</sup>

<sup>1</sup>Department of Medicine, SUNY Downstate Medical Center, New York, United States

<sup>2</sup>Department of Pathology, SUNY Downstate Medical Center, New York, United States

<sup>3</sup>Department of Pathology, Kings County Hospital Center, New York, United States

\*Corresponding author: [qiyundai@hotmail.com](mailto:qiyundai@hotmail.com)

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**Abstract** Extrapulmonary tuberculosis (EPTB) is defined as tuberculosis (TB) affecting organs other than lung. The most common site of EPTB is the lymph node. In adults, lymphadenopathy without a lung parenchymal infiltrate is rare and is usually observed in immunocompromised patients. We report a case of a 53 years old non-immunocompromised women from Haiti affected by intrathoracic and intraabdominal tuberculosis lymphadenitis without lung involvement. The patient presented with subacute fever, night sweat, fatigue, anorexia, abdominal pain, and weight loss. The diagnosis was made by the combination of computed tomography (CT) scans and histopathology studies. CT scans showed multiple lymph nodes involvement in the mediastinal and abdominal areas. Histopathology studies showed necrotizing lymphadenitis with positive acid-fast bacilli stain. The patient responded to RIPE (rifampin, isoniazid, pyrazinamide, ethambutol) therapy well and was discharged five days after initiating the treatment.

**Keywords:** tuberculosis, lymphadenitis, immunocompetent

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## 1. Introduction

In most countries, tuberculosis (TB) continues to be a major health problem. TB is divided into two categories according to the site of involvement. TB involving only the lung is called pulmonary TB (PTB), while TB affecting organs other than lung is called extrapulmonary TB (EPTB). Human immunodeficiency virus (HIV) infected persons are at increased risk for TB [1,2,3,4]. Furthermore, the individuals of HIV infection are prone to developing EPTB [5]. The most common extrapulmonary site in HIV-positive individuals is the lymph node. In adults, lymphadenopathy without a lung parenchymal infiltrate is rare and is usually observed in patient with HIV-infection [6]. In 2013, Pirina et al. reported a case of mediastinal lymphadenitis without lung involvement in an immunocompetent patient [7]. Here we report a case of both intrathoracic and intraabdominal TB lymphadenitis in a HIV-negative patient, who immigrated from Haiti to the united states 6 years prior to the onset of the disease.

## 2. Case Report

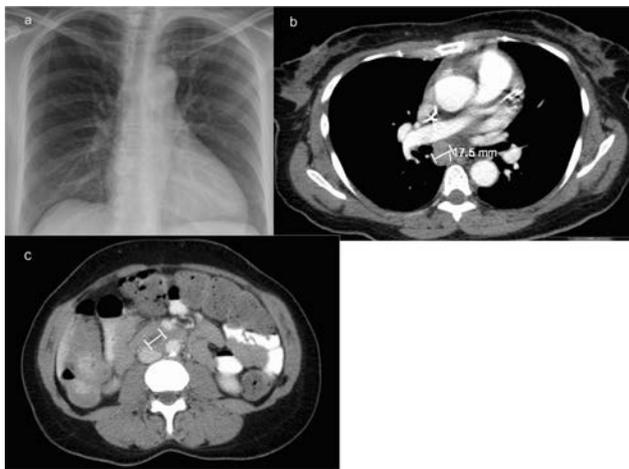
A 53-year-old women immigrated from Haiti to the unites states 6 years ago, with hypertension and diabetes

mellitus, presented with fever, night sweat, fatigue, anorexia, abdominal pain, and 20 pounds weight loss for 2 months. The patient denied previous diagnosis of TB as well as TB in her family or close contacts. At the time of admission, the patient was febrile with maximal temperature of 103.6 Fahrenheit, blood pressure 106/64 mmHg, pulse rate 104 per minute, respiratory rate 20 per minute, and pulse oximetry of 100% on room air. The patient was in moderate distress. Her heart sounds were normal and lungs were clear. The patient did not have cough. There was mild epigastric tenderness. No peripheral lymphadenopathy was appreciated by physical exam. Admission labs suggested anemia from chronic disease, normal chemistry, liver function and coagulation function. Blood culture and urine culture no growth. A positive PPD test provoked an induration of 15 mm in the forearm at 48 hours post-inoculation. Acid fast bacilli stains and cultures from inducted sputa were negative. HIV test was negative. Chest x-ray was reported as normal (Figure 1a).

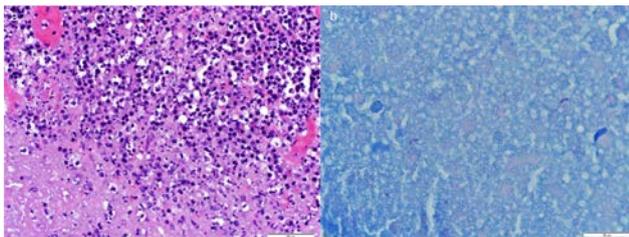
Computed tomography (CT) chest showed extensive mediastinal adenopathy including paratracheal (1.7 cm), prevascular (1.3 cm), subcarinal (1.8 cm), and supraclavicular (1.1 cm) adnopathy (Figure 1b). Lungs were clear with no evidence of consolidation or concerning nodules. CT abdomen and pelvis discovered portacaval and periaortic lymph nodes with central low

attenuation, likely representing necrosis (Figure 1c). Upper gastrointestinal tract endoscopic ultrasound with fine needle biopsy was performed and the largest perihepatic lymph node measuring 2.3 x 1.7 cm was sampled. Following histopathology study confirmed necrotizing TB lymphadenitis with positive acid-fast bacilli (AFB) stain (Figure 2 a,b). In addition, patient underwent mediastinoscopy with fine needle biopsy of subcarinal lymph node, which again showed necrotizing lymphadenitis (data not shown).

During hospital course, the patient intermittently spiked fever from every day to every two days. After the diagnosis of TB lymphadenitis was established, the patient was started on rifampin, isoniazid, pyrazinamide, ethambutol and pyridoxine. Since then, the patient was afebrile, and her night sweat and fatigue were significantly improved. The patient was discharged five days after initiating anti-TB therapy and was arranged for directly observed treatment (DOT) as outpatient.



**Figure 1.** a: X-ray of the thorax. b: subcarinal lymphadenopathy (between two parallel lines). 1c: portacaval lymphadenopathy (between two parallel lines)



**Figure 2.** a: The tissue specimen shows diffuse necrosis with chronic and acute inflammatory cells (Hematoxylin-eosin stain, 400x). b: Acid-fast bacilli (AFB) stain shows positive acid fast bacilli. (AFB stain, 1000 x with oil)

### 3. Discussion

While significant progress has been made toward the elimination of TB in the United States, this disease remains an urgent public health problem in many other parts of the world. In 2013, 64% of all TB cases and 91% of multidrug-resistant TB cases in the United States occurred among people born in other countries. More than 75% of these individuals were born in just 15 countries (www.cdc.gov).

TB can involve any organ system in the body. While lung is the most common site of infection, EPTB is also an important clinical presentation [5]. In HIV-negative patients, isolated PTB constitutes 75% of the cases [5]. While in HIV-positive patient, only 30% of the cases involves lung only with the remaining 70% of the cases involves other sites than the lung [5]. It is considered that the high frequency of EPTB among individuals with HIV infection is the failure of the immune response to contain Mycobacterium TB, thereby facilitating dissemination. Among the EPTB, peripheral lymph nodes are most often involved [8,9]. Cervical lymph nodes are most commonly affected followed by axillary and inguinal lymph node [10]. Multifocal involvement including intrathoracic and intraabdominal lymphadenopathy are more common in HIV-positive patients than HIV-negative patients [9,10,11,12].

In adults, TB lymphadenitis without lung parenchymal infiltrate is rare and is usually observed in patient with HIV-infection [6]. Here we report a case of both intrathoracic and intraabdominal TB lymphadenitis without lung involvement in a HIV-negative patient. HIV infection is a well known risk factor for developing TB. However, other causes of immunosuppression have also been recognized as predisposing factors for developing TB [13]. There is high incidence of TB in patients with diabetes mellitus, chronic renal failure, malignant tumors, as well as in those using immunosuppressive drugs [13]. The patient in this case had long history of diabetes mellitus, which might be a contributor to her EPTB. In addition, although TB lymphadenitis is more frequently a clinical sign of disseminated TB, there was no other site of involvement was identified in this patient. It is postulated that the diabetes mellitus dose not undermine the immune function as severely as HIV, which made the infection confined to the lymph nodes.

The diagnosis of TB lymphadenitis is biopsy. Acid fast bacillus (AFB) is most easily found in caseous necrotic tissue but even the absence of AFB should not detract from diagnosis, especially in patients from endemic country. In this case, AFB was identified from perihepatic lymph node (Figure 2b), but not in subcarinal lymph node. Recently, PCR has been found to be a useful diagnostic tool of TB as it enable rapid identification of Mycobacterium TB and expedites a treatment decision. Since this patient presented with extensive lymph nodes involvement and constitutional symptoms, lymphoma was on differential diagnosis. The exclusion of lymphoma was made by the immunohistochemical staining of the perihepatic lymph node for AE1/3, CD3, CD20, which showed no evidence of epithelial malignancy or lymphoma (data not shown).

Depending on the size and the location of lymphadenitis, the clinical presentation varies. This patient did not have any symptom from intrathoracic lymphadenopathy. Her abdominal discomfort seemed to be the only presentation for the intraabdominal lymphadenitis.

In conclusion, EPTB remains a public health problem in the United States. Physicians should be aware of the usual presentations of TB and should consider EPTB in the patients with fever, especially in individuals from endemic country regardless of HIV status. Medical treatment of EPTB is effective.

## Statement of Competing Interests

Authors have no competing interests.

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