A Cannonball Through the Chest: Disseminated Tuberculosis, Threatening the Aortic Arch

Henry J. Feldman*, Melek Somai*, Ezra Dweck**

**: Harvard Medical School, Beth Israel Deaconess Medical Center Dept. of Medicine, Division of Clinical Informatics*
*** : NYU School of Medicine, Hospital for Joint Diseases - Dept. of Medicine, Division of Pulmonary and Critical Care*
Faculté de Médecine du Tunis

H. J. Feldman, M. Somai, E. Dweck

Boulet de canon dans le thorax : tuberculose disséminée, qui met en danger la crosse de l'aorte

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R É S U M É

Prérequis : En 2012, l'Organisation Mondiale de la Santé a signalé 8,7 millions nouveaux cas de tuberculose dans le monde, causant 1,4 million de décès (1). Malgré les modalités thérapeutiques modernes, cette maladie se présente avec différentes symptomatologies qui resemblent parfois à d'autres maladies causant un mauvais diagnostic.

Objectif : Nous rapportons le cas pour démontrer la necessité de soupçonner une présentation atypique de la tuberculose même si une autre maladie est diagnostiquée chez le même patient. Nous démontrons également qu'avec la mondialisation et la migration des patients, ces présentations peuvent se produire dans des endroits où ces manifestations atypiques sont très rares.

Cas : On rapporte un homme agé de 48 ans qui présente depuis un mois un malaise, une fièvre au long-court, une toux productive, des sueurs nocturnes, des frissons, une douleur thoracique, une perte de poids et une tuméfaction non douleureuse au niveau du thorax. Le dignostic initial était une broncho-pneumonie intestinale avec un abcès sous-cutané. Un drainage de l'abcès a été réalisé et a montré la présence d'un liquide purulent. L'absence de contact avec le sternum au cours du drainage de l'abcès a incitè la réalisation d'un scanner thorcique. L'image d'une miliaire a été reporté au niveau des deux poumons avec un large abcès au niveau antérieur oblitérant de façon compléte le manubrium et se rapprochant de l'aorte. Le scanner thoracique a montré aussi des lésions à distance. Des analyses ultérieures ont confirmé la présence de bacille de Koch dans le liquide drainé.

Conclusion : La question que ce cas soulève est que lorsque la tuberculose est cité comme étant un diagnotic différentiel, la sympotomalogie d'une maladie courante peut en fait représenter une manifestation atypique de la tuberculose. En outre, lorsque une intervention chirurgicale superficielle est réalisée sur les tissus au niveau du thorax, en particulier lorsque on soupçonne la tuberculose, une imagerie thoracique doit être réalisée.

M o t s - c l é s

Tuberculose, Miliaire Tuberculeuse, Mal De Pott

S U M M A R Y

Background: In 2012 the World Health Organization reported 8.7 million new cases of Tuberculosis worldwide, causing 1.4 million deaths (1). Despite modern drug therapy, this disease continues to present in novel ways and mimic other diseases causing misdiagnosis.

Aim : We report this case to educate on the reason to suspect atypical Tuberculosis presentation, even if a common disease is diagnosed, when Tuberculosis remains in the differential. We also demonstrate that with globalization and patient moving between countries, that these presentations can occur in locations, where such atypical manifestations are very uncommon.

Case : We report on a 48 year old man with one month of malaise, fever, productive cough, night sweats, chills, pleuritic chest pain, weight loss and progressive non-painful swelling on his thorax. Initial diagnoses of interstitial pneumonia and a thoracic subcutaneous abscess were made. Needle drainage was attempted, with thick purulent material returned. When the sternum was not struck with the needle, a thoracic computed tomography scan was performed. A milliary pattern was noted in the lungs, with a large abscess present anteriorly, completely obliterating the manubrium, approaching the aorta with distant lesions. Subsequent analysis showed the material to be pan-sensitive M. Tuberculosis.

Conclusion : The issue that this case raises is that when tuberculosis is in the differential, even common diseases may in fact be atypical manifestations of tuberculosis. In addition, when a shallow surgical procedure is going to be performed on the thoracic soft tissues, particularly when tuberculosis is suspected, imaging of the thorax should be obtained.

K e y - w o r d s

Tuberculosis, Miliary, Tuberculosis, Skeletal, Tuberculosis, Spinal

Throughout human history, tuberculosis (TB) has been one of the most widely described disease. Formal descriptions of TB date back to the ancient Greek physician Hippocrates describing "phthisis" (consumption) as a widespread disease in ancient Greece. By the renaissance era the disease was much better understood, and by the end of the 19th century, Dr. Robert Koch had identified the agent Mycobacterium Tuberculosis. Despite new powerful drugs in the treatment of TB, TB still carries a worldwide burden of around 20 million patients, with around 8.7 million new cases (1) which causes over 1 million deaths. Tuberculosis can present as both the classic tubercules in the lung, or with extra-pulmonary manifestations that can mimic many other conditions, and in this case report, we demonstrate such an atypical presentation causing life threatening consequences due to misidentification. The issue that this case raises is that when tuberculosis is in the differential, even common disease may in fact be atypical manifestations of tuberculosis. In addition, when a shallow surgical procedure is going to be performed on the thoracic soft tissues, particularly when tuberculosis is suspected, imaging of the thorax should be obtained. As globalization increases, diseases traditionally seen in one country, are routinely being seen throughout the globe.

AIM

We report this case to educate on the reason to suspect atypical TB presentation, even if a common disease is diagnosed, when TB remains in the differential. We also demonstrate that with globalization and patient moving between countries, that these presentations can occur in locations, where such atypical manifestations are very uncommon.

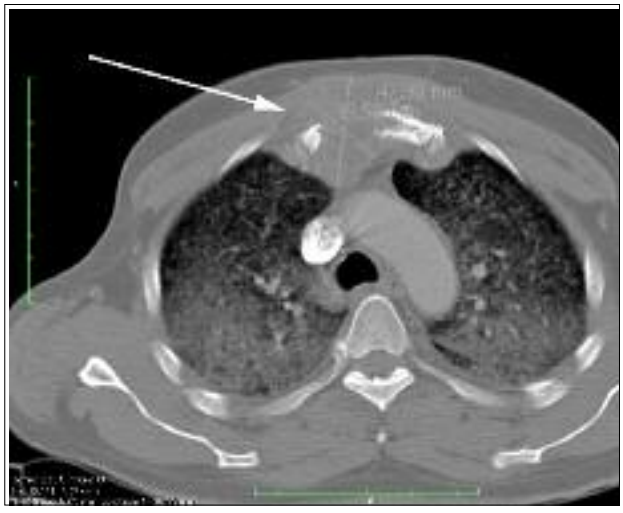
CASE

We report on a 48 year old male, presenting from a large open-room homeless shelter, originally emigrating from Liberia 23 years prior, who is brought to the emergency room after vomiting his breakfast. The patient also notes one month of general malaise, fever, cough, night sweats, chills, intermittent chest pain on inspiration, 22 kg weight loss and a progressive non-painful swelling on his thorax. Six months prior to admission the patient reports being in generally good health, when he developed upper respiratory infection symptoms associated with inspiratory chest pain. While the cough resolved, the inspiratory chest pain persisted. Four weeks prior to admission, the patient additionally developed chills and soaking night sweats, frequent headaches and a cough productive of thick brown sputum. Three weeks prior to admission, the patient noted the development of a soft, non-painful swelling in the area of his upper sternum.

2 weeks prior to admission the patient went to the shelter infirmary, and was given supportive care, with no improvement in symptoms. The patient complained of loss of appetite and 22 kg weight loss over the six weeks. On the day of admission, the patient had several episodes of emesis, and was brought to the hospital. Admission vital signs were significant for tachycardia, fever of 40.1C and room air oxygen saturation of 88%. Physical examination was significant for some scattered crackles and a 5cm soft, fluctuant, mobile swelling over the sternum at the level of the second intercostal space; the neurological exam was non-focal. A portable AP-view chest radiograph was read as "a diffuse hazy ground glass appearance to the lungs that may be secondary to an interstitial infection process such as a viral pneumonia or PCP." No other lesions were reported by the radiologist.

The decision was made that his fever was likely due to a large subcutaneous abscess over the sternum, and that therapeutic sterile large-bore needle aspiration of the contents would produce cultures for antibiotic therapy selection. The aspiration procedure was considered safe to perform without advanced imaging guidance due to the backing of the manubrium and sternum under the abscess. Due to the depth and extent of the fluctuance the manubrium could not be palpated under the lesion. During the procedure, purulent material was aspirated from the lesion, however no contact was made with the sternum despite deep aspiration to the needle hub, so the procedure was aborted. An immediate thoracic computed tomography (CT) scan (Phillips Medical) with intravenous contrast was obtained. On mediastinal imaging windows (W400, C40) an approximately 4 x 5cm necrotic mass destroying the manubrium was seen (See Figure 1), as well as a diffuse pulmonary milliary process. In addition a lytic process is seen in the body and pedicle of thoracic vertebra T12, and on the upper abdominal images of this CT bilateral adrenal masses with the largest measuring 6x5cm (See Figure 2).

Figure 1 : Contrast CT study of the chest showing: tubercular abscess destroying the manubrium encroaching on the aortic arch, and infiltrative lesions in the lungs with classic milliary TB pattern in Axial and 3D reconstruction views (Osirix 3.3.2)



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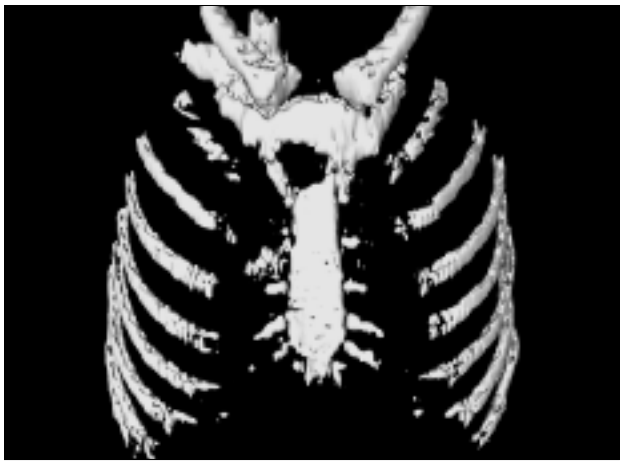
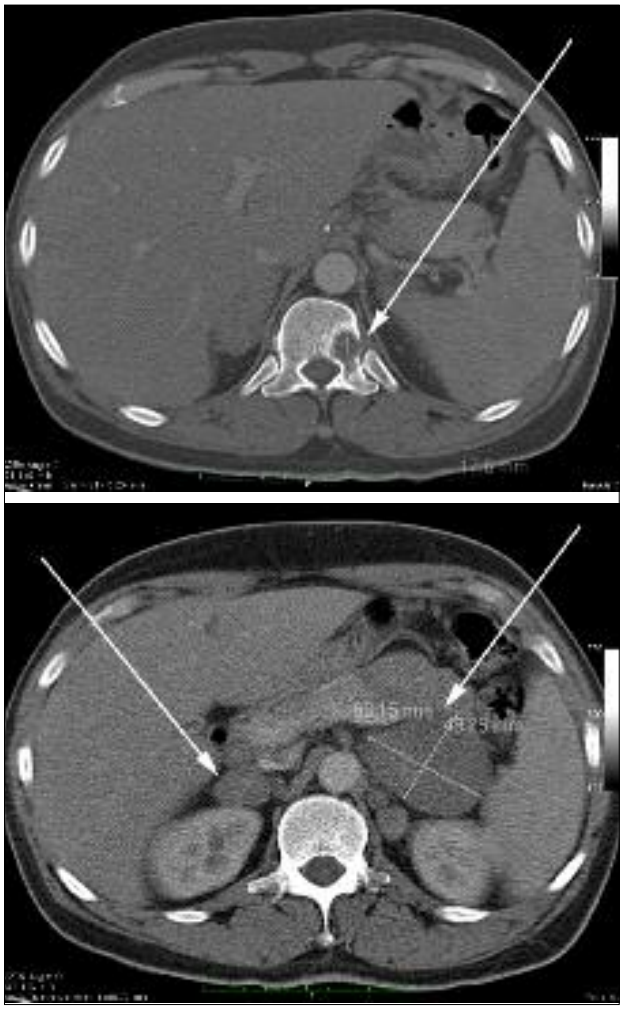


Figure 2 : Contrast CT study of the chest, showing a T12 vertebral lytic lesion and adrenal tuberculomas



The patient was admitted to the Medical Intensive Care Unit (MICU) given the proximity of the abscess and needle tract to the aortic arch. Emergent consultation was obtained from the Cardio-Thoracic (CV) surgical service, which determined that no surgical intervention was required as the wall of the aorta had not been breached. Microbiological studies of the aspirated material came back staining positive for "Many acid-fast bacilli, gram stain negative for organisms." Given the patient's disease potentially compromising the major thoracic vessels, emergent anti-mycobacterial therapy with 4 drug therapy, consisting of INH, Rifampin, PZA, Ethambutol was initiated. Induced sputum was sent for culture and sensitivities to the New York State Department of Health, which demonstrated pan-sensitive Mycobacterium Tuberculosis. The patient was continued on the inpatient service for approximately 3 months, until the induced sputums were no longer positive for acid fast bacilli. The patient was discharged to a city TB shelter for continued INH and Rifampin therapy for a projected 9 month course under directly observed therapy (DOT). Subsequent follow-up imaging demonstrated partial healing of the bony structures and resolution of his milliary disease.

DISCUSSION

According to the 2000 US Census data, the number of foreign born people in the United States is approximately 33 million. As immigrants are an increasing part of the patient population seen in US hospitals, forms of diseases normally seen outside of the US need to be considered in patients. This patient is from Liberia, population approximately 3 million, which has an incidence per the WHO of 10,034 cases of TB in 2004.

Mycobacterial infections continue to occur commonly throughout the world, with varied manifestations of disease, most classically pulmonary infiltrates with cavitation. Extrapulmonary disease occurs in approximately 20% of patients, with only 3% of these involving multiple sites (2); additionally approximately 1% of extrapulmonary disease occurs in the sternum and clavicle (3) Skeletal disease occurs most commonly in the lower thoracic spine (Pott's Disease) (4, 5), with incidence between 25-50% of skeletal disease.

Rarely does the disease progress in patients with access to healthcare to include pulmonary, skeletal and solid-organ disease together. In a search of the medical literature, we found no reports of pulmonary and extra-pulmonary disease of this magnitude, involving the central vessels, multiple osseous structures and adrenal glands simultaneously. In one case series, none of the patients with large sterno-clavicular abscesses presented with disease other than local compression and extension of the infection (6). The importance of treatment is demonstrated by the partial healing of the bony lesions and regression from the aortic arch.

The lack of physical examination evidence of a compromised manubrium along with failure to visualize on plain-film

radiology, demonstrate the need for advanced imaging such as ultrasound or CT prior to incising lesions over the sternum where TB is a possibility.

CONCLUSION

Mycobacterial disease, should always be suspected in patients presenting with persistent cough, fever, weight loss and night sweats. In patients who are not born in the country of presentation, case presentations more common from their home country should be expected. In cases where tuberculosis is suspected, and unusual findings are noted, such as a cutaneous abscess which arose at the same times as the constitutional symptoms, tubercular abscess should be suspected. In these cases advanced imaging is warranted to determine extent of disease. There are few indications for emergent institution of anti-tubercular medications without cultures, however, in the case presented, the potential immediate threat to life due to encroachment on the aortic arch, justifies this therapy. Given our patient's burden of disease, even on multi-drug anti-tubercular therapy, successful sputum cultures were obtained for determination of sensitivity patterns.

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