

Disseminated Tuberculosis A Rare Presentation

Fazila Khattak (1)
Husam Al Saudi (2)

(1) Consultant Family Medicine, AbuNakhla Health Center, Primary Health Care Corporation, Doha, Qatar

(2) Specialist Internal Medicine, AbuNakhla Health Center, Primary Health Care Corporation, Doha, Qatar

Corresponding Author:

Dr. Fazila Khattak (MBBS, MRCGP)

Tel: (+974) 3012 8694

Email: fazilaakbar@yahoo.com

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Abstract

This is a case report of an atypical presentation of disseminated tuberculosis in a forty-one-year-old otherwise healthy female. Although tuberculosis has been known to mankind for centuries and there is a vaccine against the disease and multiple newer antibiotics available in today's world, it is still one of the major causes of morbidity and mortality and its presentation can be deceptive and diagnosis can be difficult.

This is a case report of a 41-year-old female who presented with a short history and acute symptoms that are atypical for tuberculosis.

This case demonstrates the deceptive presentation of this disease and hence importance that clinicians need to be more vigilant, otherwise an important disease that needs timely diagnosis and treatment can be missed.

Key words: Case report, disseminated tuberculosis

Introduction

Tuberculosis (TB) is a disease that is caused by a bacterium *Mycobacterium tuberculosis*, that is contagious. It can spread one from person to another through coughing, sneezing and breathing in airborne droplets that contain bacteria. It does not spread by sharing utensils shaving or through saliva (1).

TB is one of the oldest recorded human afflictions that has caused human suffering and harm and is still one of the serious life-threatening conditions among the infectious diseases, despite the worldwide use of a live attenuated vaccine called BCG and use of various antibiotics for its treatment.

Two million people die of tuberculosis each year worldwide in spite of BCG vaccine and use of various antibiotics and this clearly demonstrates need for more effective newer vaccines and antibiotics (2).

“Initial symptoms of tuberculosis may include a bad cough that may last three weeks or more, chest pain, bringing up blood or mucus with cough, fatigue, un-intentional weight loss, chills, fever, night sweats and loss of appetite” (3).

“In 2017, an estimated 10 million TB cases were diagnosed, and 1.6 million TB deaths occurred, representing reductions of 1.8% and 3.9% from 2016, respectively” (4).

A recent study in 2018, conducted by WHO (World Health Organization) that shows the total number of cases of tuberculosis in the world, found that the greater incidence occurs in those infected with HIV (Human Immune deficiency Virus), as compared to the normal population. It also shows the number of cases resistant to antibiotics against tuberculosis, such as rifampicin and isoniazid, which demonstrates the need for newer medication against this chronic disease. (Figure 1) (5).

According to WHO global and regional report 2018, there were more notified male cases of tuberculosis than female cases throughout the world, with more cases among 15-24 years and 25-34 years Figure 2 (5).

There are certain groups which are more at risk of developing tuberculosis, such as workers or people being cared for in long term care facilities, low income and overcrowded living populations with impaired quality of life. Also, people at high risk of disease are those who are intravenous drug users or have poor immune systems as in those with human immune deficiency virus or who travel to high risk countries or are caring for someone with tuberculosis. All the above increase the risk of direct contact and hence transmission of tuberculosis (6).

WHO Member States

194

Other countries and territories

22

ESTIMATES OF TB BURDEN,^a 2018

	NUMBER (thousands)	RATE (per 100 000 population)
Total TB incidence	10 000 (8 990–11 100)	132 (118–146)
HIV-positive TB incidence	862 (776–952)	11 (10–13)
MDR/RR-TB incidence ^b	484 (417–556)	6.4 (5.5–7.3)
HIV-negative TB mortality	1 240 (1 160–1 320)	16 (15–17)
HIV-positive TB mortality	251 (224–280)	3.3 (2.9–3.7)

Figure -1 Taken from WHO Global & Regional report (5)

MDR is TB resistant to rifampicin and isoniazid; RR is TB resistant to rifampicin.

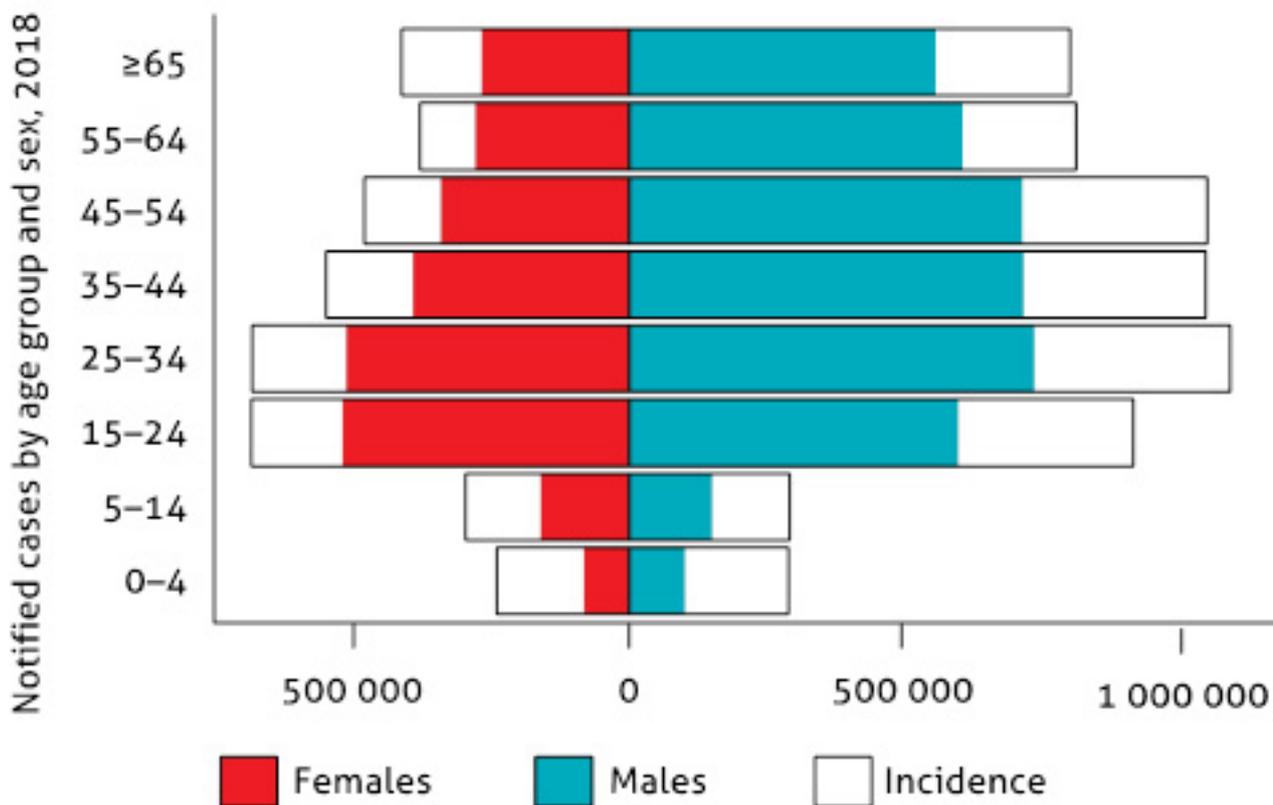


Figure 2 Taken From Who Global And Regional Report 2018.(5)

Case Report

This is a very unusual presentation of a 41-year-old female with disseminated TB. She initially presented to her general practitioner with cough, of acute onset which started 10 days back, and was dry in nature. The patient related her symptoms to the recent house move and possibly allergic in nature. She was a mother of three healthy children with no past medical history, was a non-smoker and had no drug addictions. Originally, she was from France and had recently moved to Qatar.

There was no history of typical tuberculosis symptoms like any fever, sputum, haemoptysis, chest pain, weight loss or night sweats. On examination her doctor noted dullness on percussion on left side of chest and requested a chest x-ray. The chest x-ray showed left sided pleural effusion with possible underlying consolidation and/or collapse of left lung (Figure-3).

The lady was a French national and moved from France to Qatar in June 2018. She visited her doctor in September 2018, three months after her arrival from France. In France she was in contact with her father in law who was getting treatment for suspected brain tuberculosis.

Following her chest x-ray, she was referred to a local hospital for further investigations. She had a Computer Tomography (CT) of chest abdomen and pelvis along with basic blood tests including blood cultures. Her CT showed left pleural effusion, along with consolidation and collapse of left lung with multiple bony lesions detected in spine, which were small paraspinal abscesses.

Cytology of pleural effusion showed lymphocytic effusion that pointed towards possible tuberculosis. A QuantiFERON test was positive.

She had a bronchoscopy along with pleural biopsy to check for malignancy and to confirm the diagnosis of tuberculosis. The pleural biopsy showed necrotizing granulomatous inflammation but was negative for acid fast bacillus. She also had Magnetic Resonance Imaging (MRI) of spine showing multiple vertebral osteomyelitis and small abscesses at prevertebral and paravertebral levels, suggestive of spinal tuberculosis (Figures 4 and 5).

Figure 3: Plain chest x-ray showing left sided pleural effusion with possible consolidation / collapse

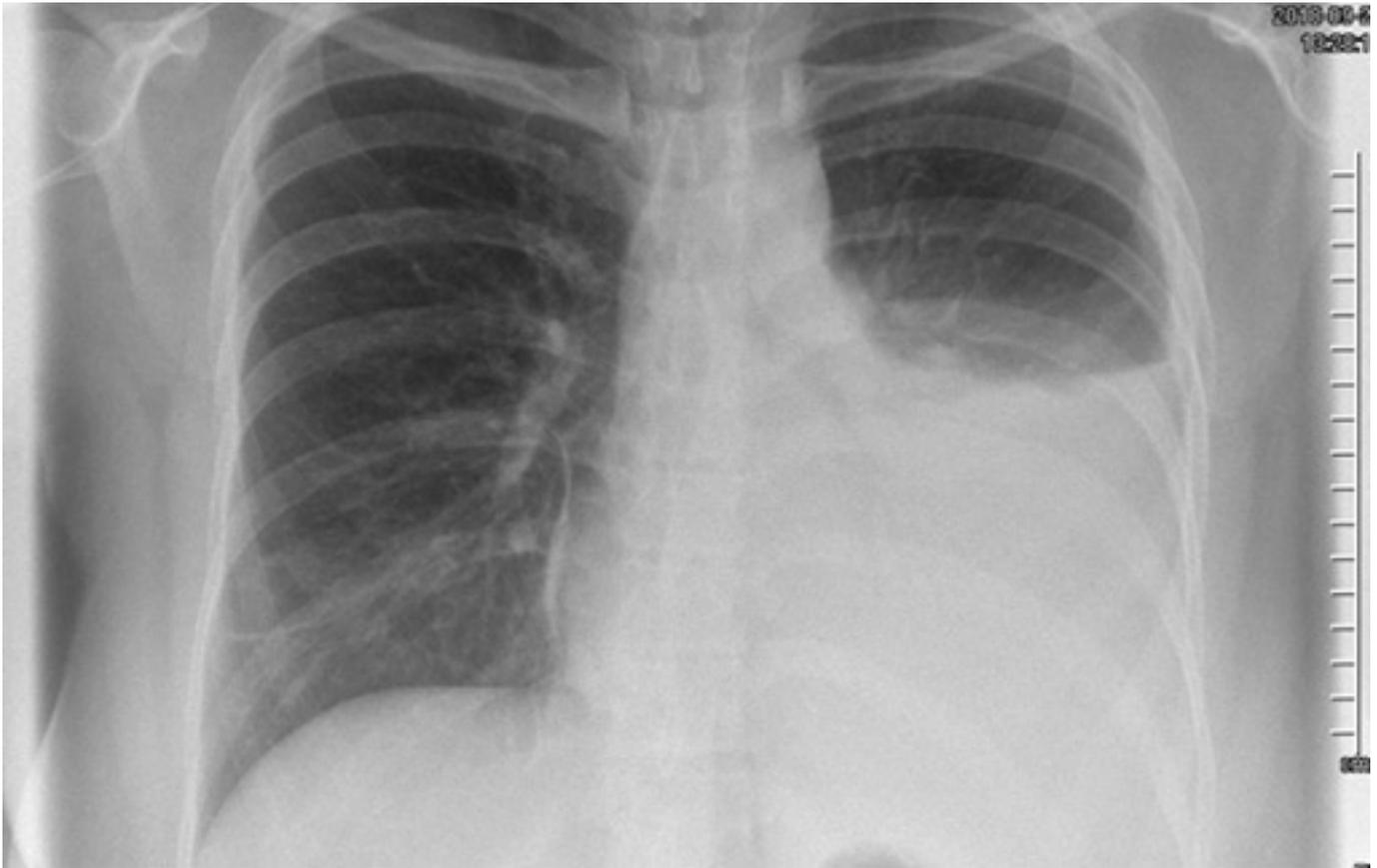


Figure 4: Showing Multiple Paravertebral abscesses.

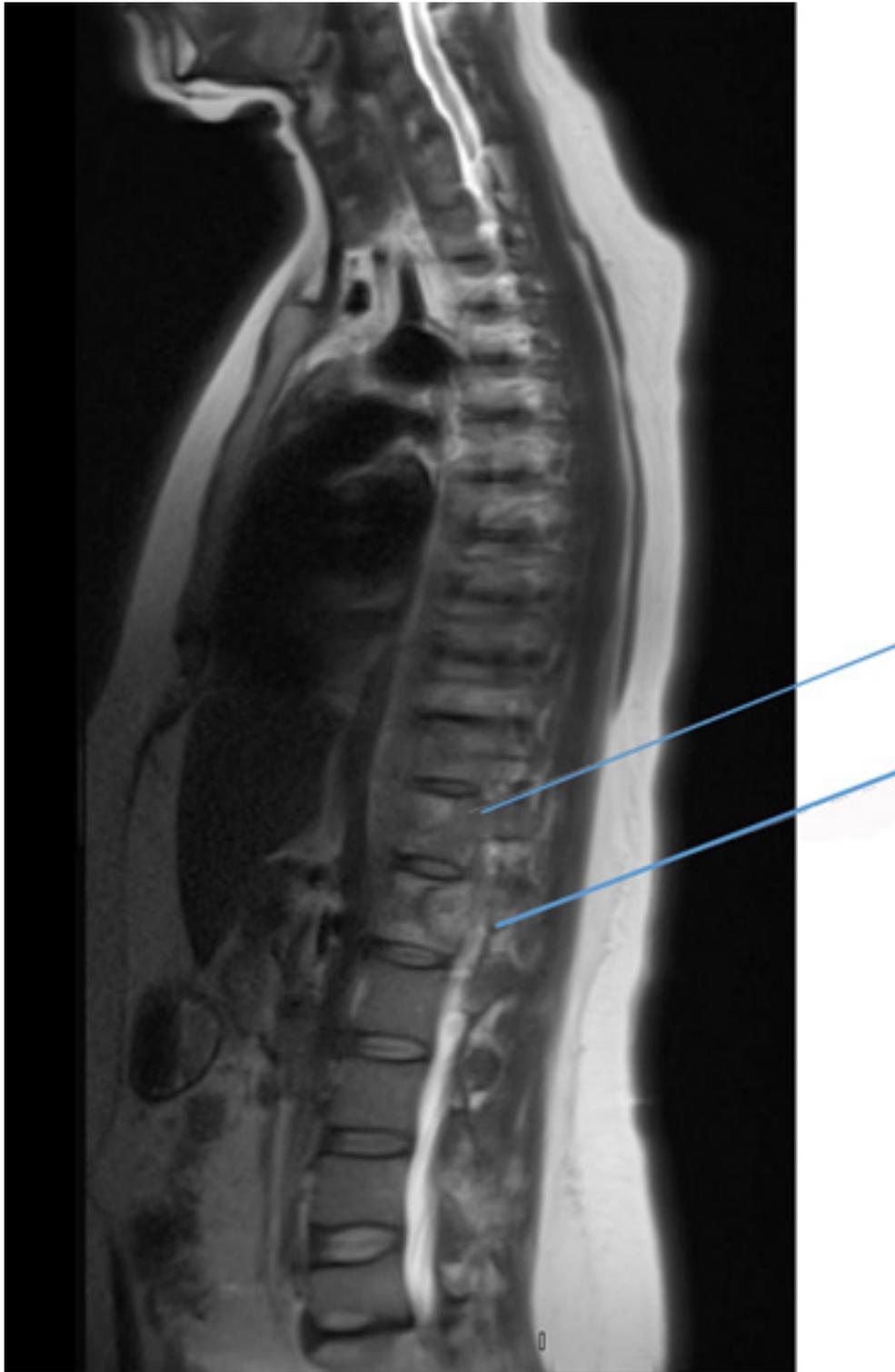
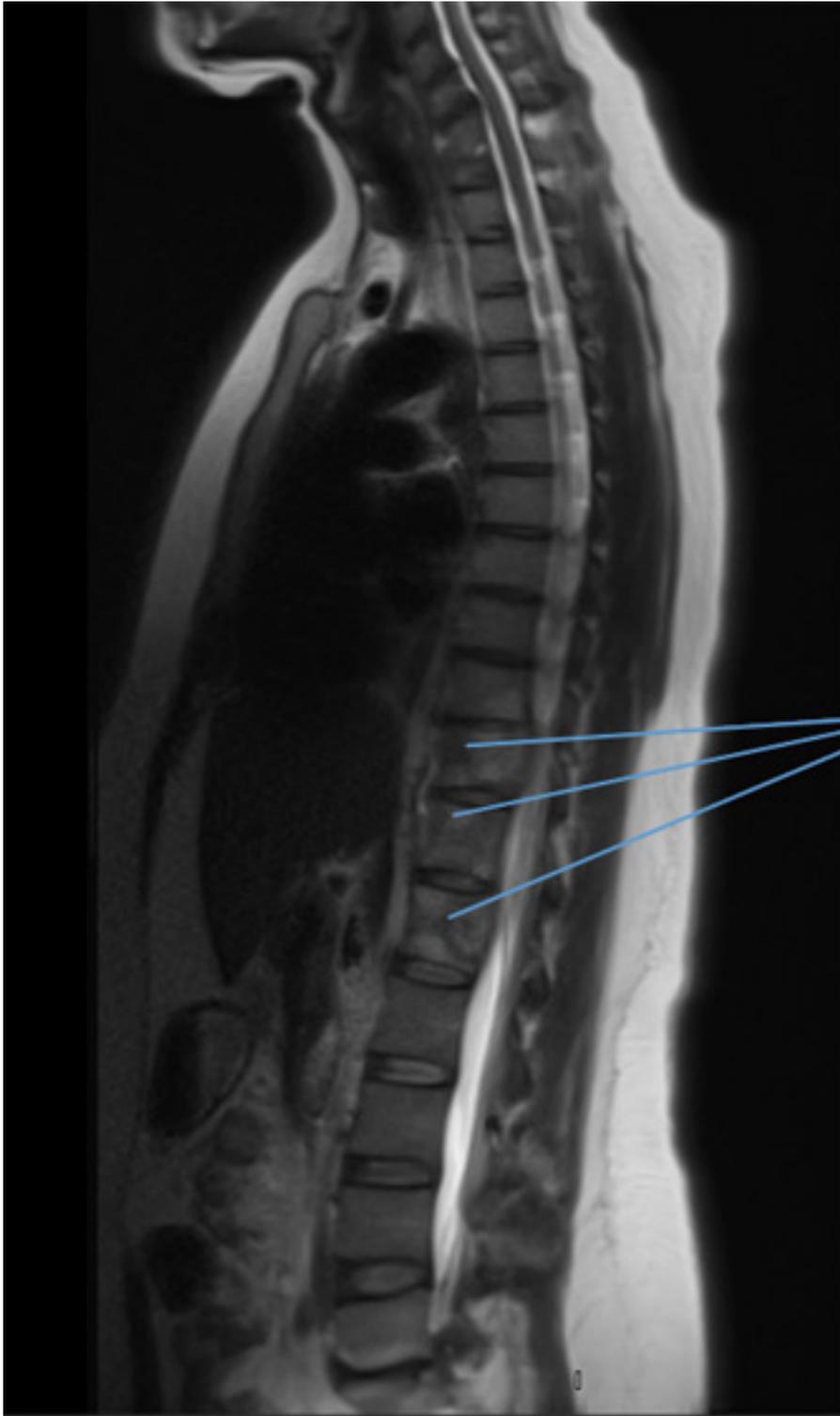


Figure 5: Showing Multiple Paravertebral abscesses.



With a high degree of suspicion of disseminated tuberculosis the patient was started on treatment for disseminated tuberculosis. In October 2018 while on treatment for tuberculosis, she became pregnant and gave birth to a healthy baby in June 2019.

An MRI spine was repeated in September 2019 after nearly one year of treatment that showed significant improvement in her spinal lesions. In December 2019, her repeat chest x-ray was normal.

She received the treatment for 18 months in total.

Figure 6: Post Treatment Chest X Ray

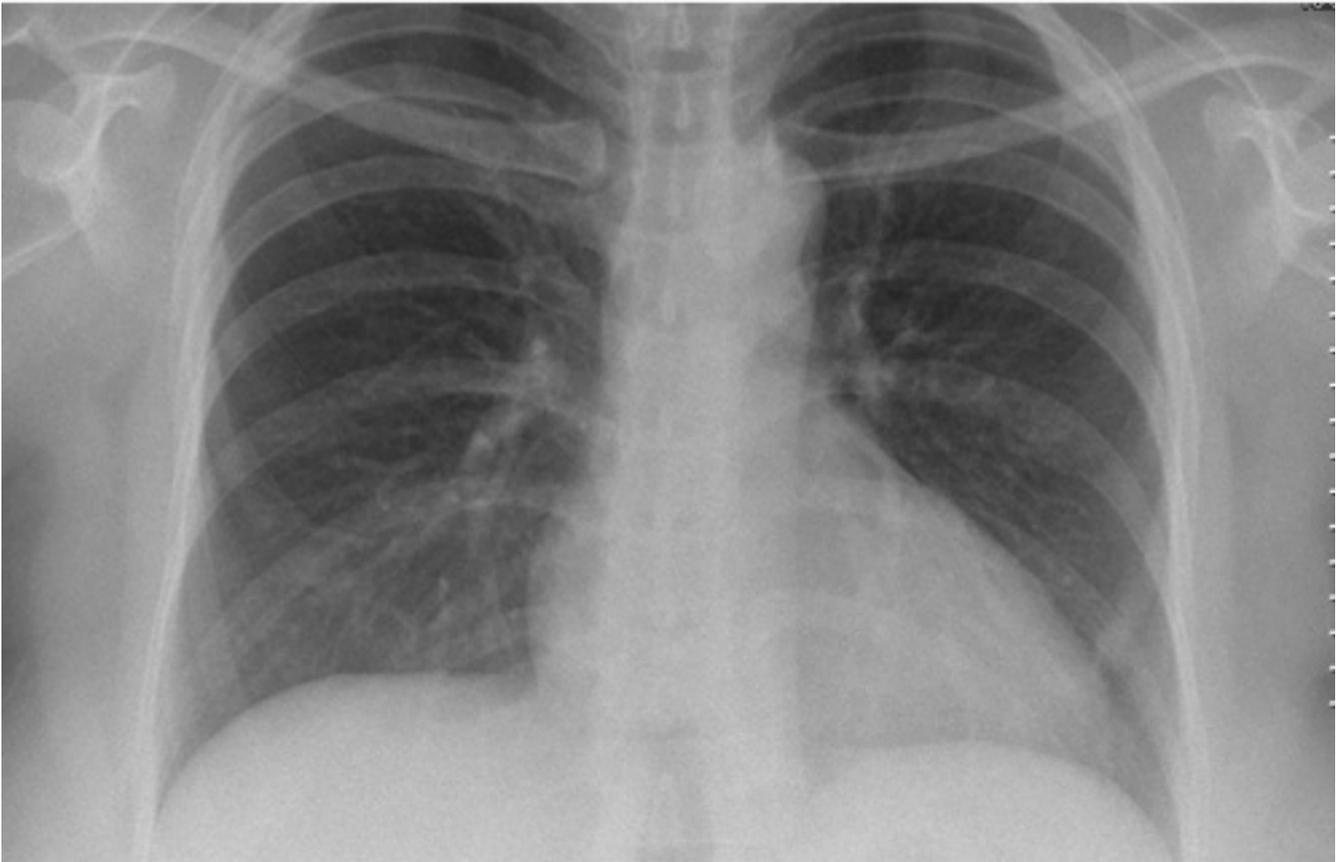
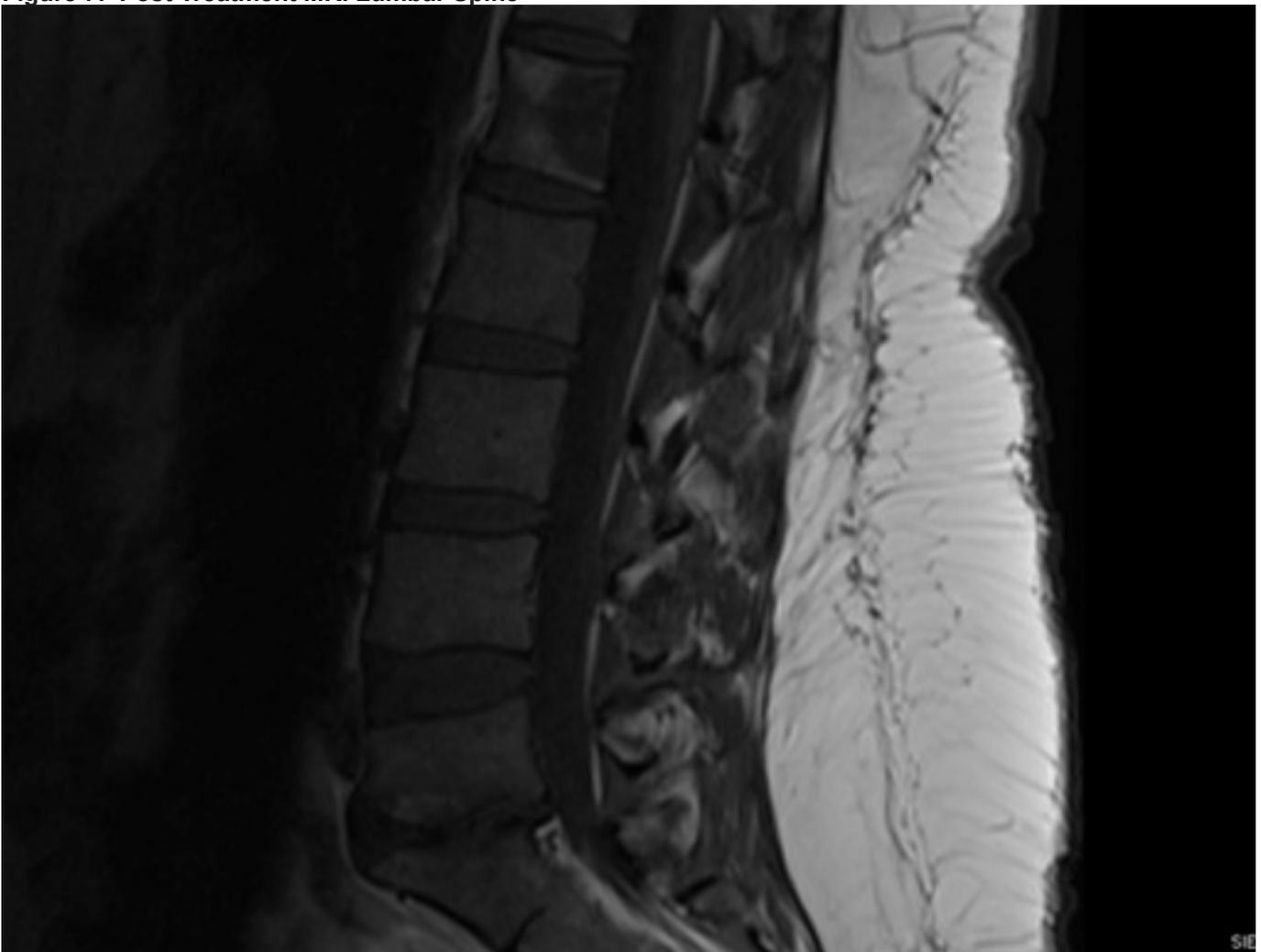


Figure 7: Post Treatment MRI Lumbar Spine



Discussion

This case report supports the fact that there is a good possibility that the patient presenting with tuberculosis might not present with its well-known symptoms of cough with sputum or sputum stained with blood, sweats at night and unintentional loss of weight. In the absence of these typical symptoms a clinician can take a long time to diagnose the disease itself; this can lead to delay in treatment, prolong time of treatment and occur more harm to patients (7).

Clinical appearance can be non-specific and distinctive expected chest radiographic findings of TB, like caseating granulomas in upper parts of lungs may not be seen until late in the course of the disease (8).

There are certain conditions in which there is more chance of contracting the disease as these conditions lowers the immune system and hence make subjects more vulnerable to develop TB. These conditions include people with alcohol or other drugs addiction, patients infected with human immune deficiency virus, patients with chronic diseases such as diabetes, patients on haemodialysis or with renal failure, post-extensive surgical procedures, organ transplantation, rheumatoid arthritis, chronic obstructive pulmonary disease, cystic fibrosis or suffering from neoplastic conditions (9).

If a patient presents with findings of pleural effusion on chest radiograph and there is clinical suspicion of tuberculosis, then pleural biopsy is the investigation of choice. Sometimes tuberculosis can present acutely as adult respiratory distress syndrome. In such cases the clinician might be misguided and one might try to treat such acute presentations with simple antibiotics, however that will not improve the patient condition and of course again can lead to further delay in prompt treatment of tuberculosis. It is imperative that clinicians should be aware of such deceptive and varied presentations not only in symptoms but on radiographs (10).

A study in a hospital in Boston, USA showed that four per cent of the patients were misdiagnosed on admission despite the fact that the majority of them had radiographic findings characteristic of tuberculous disease. This should make us think that how many can be missed if there is absence of typical radiographic findings of tuberculosis. The disease does not always present with granulomas in upper lobes of lungs (11).

The diagnosis of miliary TB can be challenging. The subtle deceitful course that the infection takes, the vague symptoms it may present with and the delays in obtaining a microbiological or histological diagnosis all contribute to the lag in its diagnosis and consequent high morbidity and mortality (12).

“A compelling radiologic finding in chest CT is the “tree-in-bud” pattern. This shows multiple branching linear structures that represent bronchogenic dissemination of

disease with caseating necrosis in the respiratory and terminal bronchioles. These branching opacities have a lobar or segmental distribution and are considered reliable markers of activity” (13).

If there are not many symptoms that are suggestive of tuberculosis and sputum smears come up negative, but the clinician has suspicion due to history of travel or any other reason, the flexible fibreoptic bronchoscope is also an option. In fact carrying out bronchoscopy and taking pleural biopsies has been a particularly effective and fruitful option not only in the diagnosis of respiratory tuberculosis, but also in obtaining secretions and tissue in difficult cases (14).

Tuberculosis can invade practically any organ. It spreads via blood and lymphatic endocrine system. The proportions of organ involved in multiple publications suggest that most cases of tuberculous outside lungs are seen with pleural, skeletal spine, and lymphatic involvement, and disseminated TB can involve two or more organs. It can also involve the genito-urinary system and brain (15).

“The spine is the most common site of bone involvement by tuberculosis. Spinal tuberculosis or vertebral bone involvement (Pott’s disease) accounts for approximately 50% of cases of skeletal tuberculosis. The most common location is first lumbar vertebrae. The disease process most often begins in the anterior part of the vertebral body adjacent to the end plate. Extension may occur along the anterior or posterior longitudinal ligament or directly through the end plate. Collapse of a vertebral body, particularly the anterior segment, may result in tuberculous kyphosis. Magnetic resonance imaging is of great value in diagnosis of spinal tuberculosis and abscesses” (16).

As this case is about atypical presentation of tuberculosis, it is interesting to mention here that hypercalcemia in a patient with no other cause such as hyperparathyroidism and malignancy, granulomatous disease should be kept in differential diagnosis including TB (17).

Tuberculosis, along with berylliosis, fungal granulomas, Hodgkin non-Hodgkin lymphomas are some conditions that are associated with disorders of calcium metabolism (18).

Conclusion

The above case and also evidence from literature demonstrate clearly that tuberculosis does not always present with typical symptoms and radiographic evidence. Also, the extent of disease itself might not be evident from symptoms alone. Widespread tuberculosis can present with minimum symptoms that can be deceptive and diagnosis can be missed easily.

Tuberculosis is a difficult diagnosis because although there are many diagnostic tests available none of them are quick and fully confirmatory and this can delay both

diagnosis and treatment and from untreated infectious individuals the disease continues to spread. This is the reason that we are still struggling to control and eradicate tuberculosis.

To control this infection globally more rapid diagnostic tests are required, and more effective ways of screening need to be found.

As health care professionals we should be alert and aware that with limited and minimum symptoms tuberculosis can be deceptive and its diagnosis easily missed.

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