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Case Report

Delayed diagnosis of thoracic spine tuberculosis: a learning objective in primary care

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ABSTRACT

Spinal tuberculosis (TB) constitutes 2% of all TB cases and is a common of all extrapulmonary TB. Despite high prevalence of TB worldwide, it is still sub-optimally controlled owing to the factors like poverty, rising human immuno-deficiency virus (HIV) infection and other chronic illnesses, drug misuse, population surge in developing countries and global migration. This case report presents a 38-year-old man who presented with recurrent chronic thoracic back pain. Further investigation in his third visit revealed a compression fracture of T7-8 vertebrae, with a pathologic fracture with spondylitis, epidural abscess and spinal cord compression suggestive of an infectious process, with tuberculosis being the primary differential diagnosis. We present our case to highlight the importance of a meticulous history taking and examination at first presentation and how cases of spinal TB should not be overlooked.

Keywords: Pott's spine, Thoracic tuberculosis, Delayed diagnosis of spine TB, Extrapulmonary TB, Chronic back pain

INTRODUCTION

Spine tuberculosis (TB) or commonly known as Pott's spine accounts for 2% of all TB cases. However, it is a common extrapulmonary TB affecting the spine which contributes nearly half of all musculoskeletal TB.[1] Globally, about 25% of the world population is affected with TB where South-East Asia, Africa and the Western Pacific had the highest prevalence, according to World Health Organization (WHO) report, 2022.[2] Poor living condition, improper hygiene and poor nutrition, and overcrowded environment are all associated with tuberculosis in developing countries. However, cases are rising in the developed countries as well owing to rising migration. Not to forget that the growing prevalence of chronic diseases and human immuno-deficiency virus (HIV) have major contribution to the incidence of TB.[3]

The spread of the *Mycobacterium tuberculosis* is primarily via blood stream or lymphatic channel from the primary focus which could be lungs, lymph nodes, gastrointestinal tract or genitourinary system or any other organs and causes secondary infection.[4] The patient may present with typical constitutional symptoms of TB with night sweats, fever, weight loss or perhaps just the chronic low back pain. Owing to its neurological complications due to adjacent neural structures compressions and spinal deformity, early perception of the disease with meticulous examination and timely diagnosis plays a pivotal role in preventing such disastrous complications.[5] Hence the role of primary physicians is of utmost importance in any patients presenting with chronic low back pain.

This article sets out to discuss the importance of history taking and examination when encountering patients with recurrent thoracic back pain, importantly to consider all red flags before accepting a diagnosis, particularly in the case of spinal TB.

Learning objectives

Objectives were to: emphasize the importance of thorough history taking and physical examination in primary care, highlight the significance of taking repeated visits for the

same complaints seriously, raise awareness about spine tuberculosis in young individuals from African regions presenting with long standing back pain, stress the need for relevant investigation in case of acute severe or chronic back pain, discuss red flag signs and symptoms as crucial indicators for prompt investigations and referrals, and demonstrate how timely investigations based on proper history and examination can prevent delays in initiating immediate treatment.

CASE REPORT

A 38 years old man from Kenya working in Qatar as a security guard, presented to a family medicine clinic with chief complaint of thoracic back pain for around 3 months. The pain suddenly developed while he was doing stretches for his back pain. He denied any obvious trauma. He had two previous visits to the family medicine clinic for the same complaint and was prescribed analgesics because of normal physical finding. On his 3rd visit, his gait was altered and was walking slowly into the clinic due to pain. He didn't have any history of fever, cough, haemoptysis, night sweats or weight loss. No changes in bowel and bladder function. His vitals were all within normal limits. He didn't have any history of TB in the past nor did his family.

On examination, he was alert, afebrile, no pallor or icterus with good hydration status. No palpable lymph nodes were detected anywhere. His chest was clear with equal air entry bilaterally and normal cardiovascular, abdomen examination. His straight leg raising test was positive on both sides, and there was tenderness over the mid dorsal spine. No changes in the overlying skin colour. Both the lower limbs' motor was 4/5 and intact sensation. X-ray thoracic and lumbar spine was ordered immediately which showed a compression fracture of T7-8 vertebrae (Figures 1 and 2). After having a discussion with the patient for further needful evaluation, he was urgently referred to the Emergency Department in the ambulance for further evaluation and management.

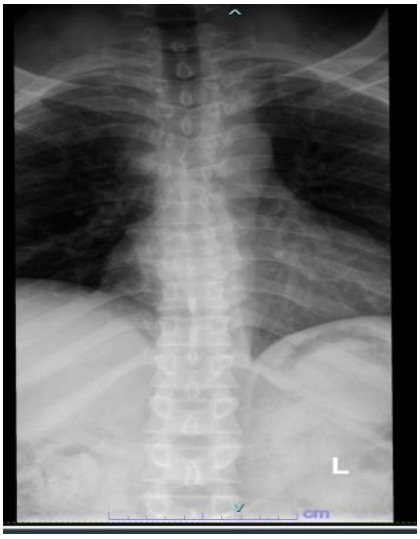

Figure 1: X-ray dorsal spine AP view.

The lab test showed a positive TB polymerase chain reaction (PCR) in his sputum and QuantiFERON was intermediate. The computed tomography (CT) thoracic spine was conducted at Emergency Department followed by magnetic resonance imaging (MRI) which revealed pathologic fracture of T7-T8 vertebrae with spondylitis, epidural abscess, and spinal cord compression and thoracic pre-vertebral and paravertebral phlegmon formation suggestive of infectious process, primary differential diagnosis being tuberculosis (Figures 3 and 4). The patient was admitted in the general hospital under the neurosurgical team and underwent T7-8 decompression with evacuation of spinal epidural collection plus T5-10 transpedicular screw fixation (Figure 5). He was started on anti TB medication and steroid along with other supportive medications. Over the period of his stay in hospital he developed further weakness of the lower limbs for which he had undergone physical and occupational therapy under the rehabilitation team. He was discharged after about one and half months of hospital stay with follow up program by a multidisciplinary team.

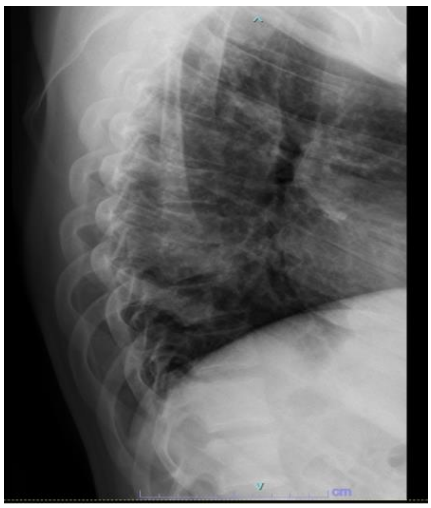

Figure 2: X-ray dorsal spine lateral view.

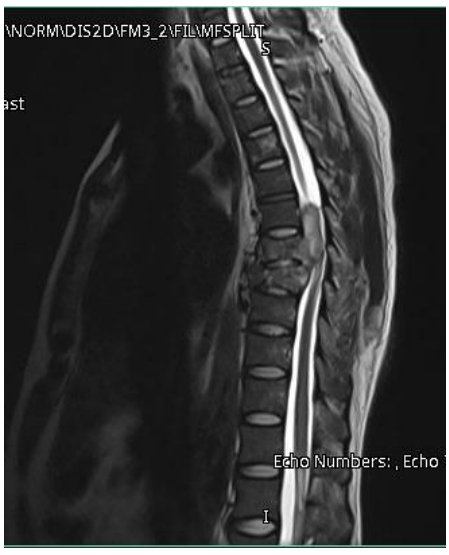

Figure 3: MRI dorsal spine.

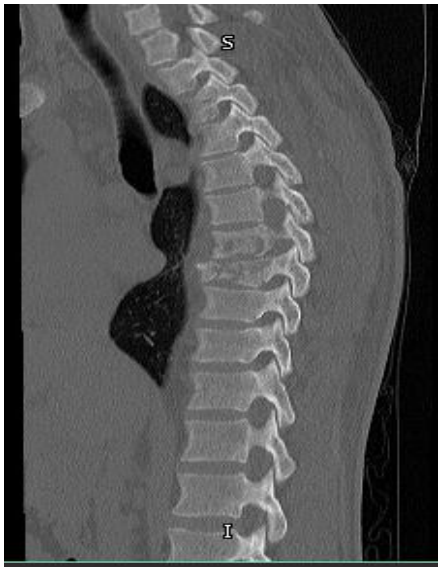

Figure 4: MRI dorsal spine.

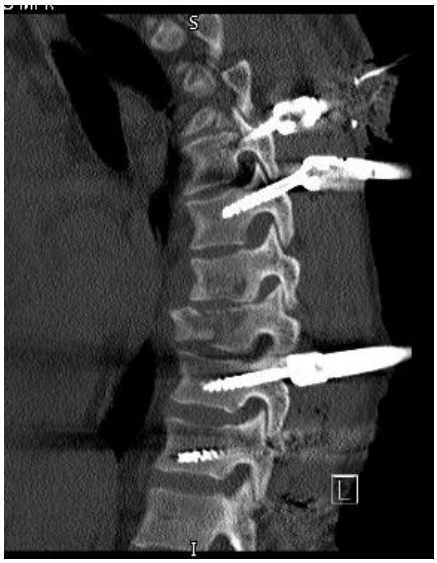

Figure 5: Post-surgical screw fixation.

DISCUSSION

Low back pain is a common problem constituting approximately 7.8% in general population worldwide.[6] In the United Kingdom (UK), it is estimated that the annual visit to the GP with back pain is about 6.4%.[7] Despite being uncommon, Pott's spine is still the most prevalent among all the extrapulmonary tuberculosis constituting approximately 2%.[1] Globally, African region has the second highest number of tuberculosis (24%) after South-East Asia (45%).[8] Due to the presentation of nonspecific symptoms and a gradual progression of the disease, the suspicion and diagnosis of TB spine can be delayed in the initial phase.[9] As a result, this leads to a development of grave consequences of serious complications including spinal deformities, neurological deficits and even paralysis.[10] One study showed that around half of the cases of spine TB presented with just the back pain and led to the misdiagnosis rate of 41%.[11] However, other factors may also play a role in delayed diagnosis of vertebral TB, for e.g. socio-demographic and economic factors. Identifying these factors particularly from TB endemic areas may raise clinical suspicion and prevent diagnosis delays in such cases.[12]

Qatar is a hub for international migrant workers coming from many low- and middle-income countries including Africa and South-East Asia. Due to this influx of large number of expatriates from TB endemic countries, the cases of both pulmonary and extra pulmonary TB are detected.[13] Our patient belonged from African region who worked as a security guard in Qatar. He had long history of back pain and presented recurrently for the same problem but without other constitutional symptoms. On further investigations, he developed complications which could have been prevented. Both clinical suspicion and imaging modalities are essential for definitive diagnosis of spinal TB with MRI being the most valuable tool.[14] Lack of such facilities leading to diagnostic delays may be expected in resource limited countries but in a rich country like Qatar, with access to modern diagnostic technologies, investigations with imaging should not be delayed.[9]

Hence, given these challenges, it is essential for healthcare professional to maintain a high index of suspicion for extrapulmonary TB particularly in someone from TB endemic countries who repeatedly presents to the primary care facility with a chronic back pain despite absence of a constitutional symptoms of TB. Therefore, I hereby highlight the learning objectives for all the primary care physicians.

CONCLUSION

Spine TB should not be overlooked particularly in those from TB endemic countries who present repeatedly for chronic back pain. Early clinical suspicion and diagnosis with imaging modalities can prevent the grave consequences and mortality.

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