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Internal Medicine

SPINAL TUBERCULOSIS IN QATAR : A CASE REPORT.

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ABSTRACT **INTRODUCTION:**Spinal tuberculosis is an extra-pulmonary form of TB affecting the vertebral column and the adjacent structures. Neurological complications are usually common with the disease due to mechanical compression on the spinal nerves. **CASE PRESENTATION:** A 29-year-old female Kenyan patient presented to the clinic with a history of low back pain associated with numbness and bilateral weakness of the lower limb. The X-ray revealed a loss of the disc space between the first and second vertebral bodies. Further assessment by CT and MRI revealed osteolytic changes at the same level in addition to collections at the adjacent structures suggesting cold abscesses of spinal tuberculosis. A CT-guided biopsy confirmed the diagnosis by the presence of tubercle bacilli at the site of the lesion. Spinal decompression was performed to the patient and medical treatment was prescribed with regular follow up for the progression and reassessment of the condition. **CONCLUSION:** Spinal Tuberculosis is more common among African individuals, especially those who work at direct contact with many individuals. It is not always associated with immune-compromising conditions like HIV, chronic steroid abuse or chronic illness. It is best diagnosed by the radiological findings on MRI like the osteolytic lesion of the vertebral body, narrowing of the disc and the calcification of the adjacent tissues representing cold abscess.

KEYWORDS :

INTRODUCTION

Tuberculosis is one of the most ancient diseases. It has been discovered in the mummies of many ancient civilizations and the causative organism, Mycobacterium Tuberculosis, has been found in many skeletons that belonged to the prehistoric era.(1) The incidence of the diseases is continuously rising in the last decades reaching about 10 million new cases especially in countries with low socioeconomic standards like India, Nigeria and South-Africa with death rate reaching 3 million cases worldwide. The condition represents a huge burden on the individual, family and the health care system itself.(2)(3) Although, most TB patients present with pulmonary manifestations like cough, hemoptysis, night fever and sweating. Almost 20% of the cases are diagnosed with extra-pulmonary symptoms like gastrointestinal, dermatological, renal and skeletal (Spinal) manifestations.(4) Literature estimates that the prevalence of spinal tuberculosis is almost 1.7% worldwide and it is mostly associated with terminal cases of HIV especially in underdeveloped countries where patients, or the health care system, cannot afford the costs of treatment .(5)

Spinal tuberculosis is called Pott's diseases and it was named after Sir Percival Pott who first described the condition. It results from hematogenous (Arteries of the subchondral region or Batson's plexus of veins) spread of the tubercle bacilli from the primary focus to the profuse vascular supply of the cancellous bone of the vertebrae leading to the destruction of the vertebral bodies especially at the thoracolumbar junctions. However, any vertebrae can be affected, especially cervical vertebras which represent 10% of the cases.(6) The most characteristic clinical findings of Spinal tuberculosis are local back pain and tenderness, spinal deformity and a slowly-progressive clod abscess that results from extension of the condition to the adjacent soft tissues and ligaments.(7) Spinal TB is usually diagnosed by highly suggestive radiological findings on Computed Tomography (CT) that show the vertebral lesion and paravertebral spread of the cold abscess in addition to Magnetic Resonance Imaging (MRI) that determine the dissemination of the disease to the adjacent structures and the involvement of the spinal cord.(8)

As previously mentioned, the prevalence of spinal tuberculosis is quite rare and it is mostly documented in HIV cases especially in countries with low socioeconomic standards of living.

In our study, we reported a case of Pott's disease in Qatar and the steps of management of the case and the outcome of our assessment.

Case presentation.

A 29-year old female patient presented to the outpatient clinic complaining of low back pain for three days. The pain was spastic in nature, not relived by analgesics, radiating to the lower limbs and associated with numbness. The condition started two years ago with mild symptoms not affecting her daily lifestyle. However, it exacerbates as acute attacks from time to time. The patient denied any urinary or bowel problems, lymph node swelling, vaginal or breast discharge. She also reported no steroid abuse and nor a history of HIV. She only gave a history of a loss of 3 Kg of her weight in the last few months but she was dieting as per patient.

Personal history revealed that the patient is a Kenyan citizen and moved from Kenyan to Qatar to work as a maid 15 months ago. The patient denied any contact with TB patients in the past time interval. She was a smoker and started 5 years ago.

Physical examination was performed, her vital signs were normal (Oral Temperature 36.1, Heart rate: 82BpM, Respiratory Rate:19, Blood pressure: 130-90, Glasgow Coma Scale: 15 and O2 Saturation: 99) Local examination revealed Midline tenderness at the lumbar region associated with a bilateral number of the lower limbs. The power and sensation of the upper limbs were intact. However, the power of the knee and hip flexion was 4/5. The power of the knee extension was 4/5, and positive Rohemberg's sign.

Investigations.

- X-ray was primarily ordered to assess the initial condition of the patient. It revealed Wedging of the anterior aspect of the first and second lumber vertebrates in addition to the loss of the disc space (Figure1).

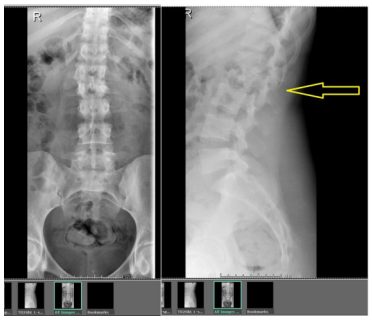

Figure1

- CT scan of the lumbar spines revealed heterogenous lytic destruction of the first and second lumbar vertebral bodies with an area of sclerosis at the level of L2 suggesting an infective etiology.

Multiple small bony fragments are noted in the spinal canal at the level of L1, L2 causing narrowing of the canal. Hypodense area with peripheral calcification is noted at the level of L1,2,3 in the bilateral psoas muscles suggesting a picture of an abscess (Figure2). Further assessment with Magnetic Resonance Imaging (MRI) is required.

Figure 2

- MRI with the lumbosacral spine with IV contrast was done and revealed a significant collapse and destruction mainly involving the plates and subchondral region of L1 and L2 vertebral bodies. The intervertebral discs of the previously mentioned vertebras are narrowed and demonstrated focal areas of T2/STIR signals. There was a post-contrast heterogenous enhancement demonstrating an intra-spinal retro-vertebral epidural area of a collection with marginal enhancement. The collection is compressing on the thecal sacs and nerve roots at the same level. It also revealed multiple paraspinal confluent pockets of peripherally enhancing collections (Abscesses) at the same level and the largest pocket is measuring 2.6 x 2.1 cm. The previously mentioned findings are consistent with L1,2 spondylodiscitis of TB (Pott's disease) (Figure3).

Figure 3

- CT-guided biopsy of the abscess
- revealed growing mycobacterium sensitive to rifampin.
- CT chest was normal.
- Laboratory Findings in the first week of admission revealed microcytic hypochromic anemia (HB: -10.9mg/dl, MCV: 66fl, MCH: - 19.3pg, MCHC: -29.3gm/dl) and elevated C-reactive protein (CRP: -15.4).

Management.

The patient was first prescribed diclofenac 75mg IM for the management of the back pain and Vitamin D2 50000 unit/ week at home. Spinal decompression with L1, L2 Laminectomy was done on both sides with removal of the friable yellowish tissue, to relieve the neurological symptoms.

Post-operatively, she was complaing of back pain especially with ambulation. X-ray follow up was done and showed increase in kyphotic deformity, then the patient underwent L1,2 corpectomy with interbody cage and Trans-Pedicular Screw Fixation (TPSF) T11-L4 (Figure4).

Finally, Anti-tuberculosis drugs were prescribed based on the sensitivity test done from her biopsy. Rifampicin -isoniazid 300 mg twice a day and pyridoxine 4mg oral, daily. The regimen was set to continue the treatment for a year and follow up with MRI and liver enzymes for the side effects of anti-tuberculosis drugs.

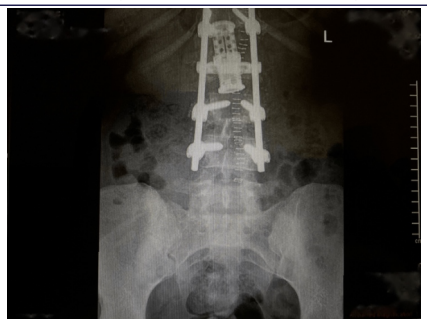

Figure 4

DISCUSSION

Spinal tuberculosis is a serious condition affecting the vertebral column and the adjacent soft tissues. The condition can spread to the spinal canal and nerves causing serious neurological complications."(9) The condition was found to be most prevalent in African countries and India especially the poor distracts with low socioeconomic standards.(2) In our study, the patient was also from African origin (Kenyan patient). Studies show that most of the extra-pulmonary TB manifestations are associated with terminal stages of HIV.(10)(11)(8) However, our patient was not diagnosed with HIV and there was no history of a steroid abuse or any chronic diseases that could compromise her immune system. This can be explained by the origin and profession of the patient as the patient was a Kenyan citizen which is characterized by a high prevalence of TB. She was also a maid which made her in direct contact with many individuals from different nationalities. Thus, she was more susceptible to carry the disease.
She was also 29 years' old which is consistent with the average age of tuberculosis in endemic areas.(10)(12)

The majority of the cases are presented with low back pain starting from a few months to several years according to the progression of the diseases. There is also paresthesia and paraparesis in addition to the general constitutional symptoms like night fever, sweating and loss of weight.(13) In our study, the patient also presented with low back pain that was stated two years ago and reported a loss of 3 kg in the previous time interval. However, she denied any episodes of fever, night sweating. Neurological complications are also common in the patient due to mechanical compression on the spinal nerves.(14) This was also consistent with the neurological findings reported in our patient which were relieved upon surgical intervention and spinal decompression.

Spinal TB is diagnosed by a series or radiological investigations like X-ray, CT and MRI in addition to laboratory findings like CBC, ESR, CRP and isolation of tubercle bacilli from the disease.(15)

X-ray of our patient revealed a wedging of the anterior surface of the affected vertebrae in addition to the narrowing of the disc space. The findings are consistent with the classical findings of TB reported in many literatures.(8)(15) The disc narrowing usually results from prolapse or atrophy of the disc tissue because of the disease and also wedging of the vertebrae can results in different degrees of kyphosis.(16) On the other hand, CT provides a more detailed picture about the nature of the lesion which is usually a lytic process, disc collapse, disruption of the vertebral integrity and the calcification in the adjacent structures. However, it is less sensitive in defining the epidural dissemination of the diseases and the involvement of the neural structures. It is also very effective for CT-guided biopsy from the lesion. (15) Our results reported similar findings of the osteolytic nature of the disease, narrowing of the canal and the calcination of the adjacent tissue indicating the presence of cold abscesses. Studies show that MRI is the investigation of choice for spinal tuberculosis as it more sensitive than X-ray and more specific than CT. It is capable of producing an accurate image of the bony changes in the vertebras, disc spaces, neurological involvement and the collections of cold abscesses in the adjacent structures.(17)(18)"(19) Using the MRI, We managed to identify the level of vertebral collapse and destruction, the epidural area of collection of the cold abscesses and the extent of the condition to the adjacent soft tissues and the accurate size of the largest one.

The best approach for the management of spinal TB consists of combined surgical and medical procedures. The surgical approach for non-complicated cases is performed via major posterior decompression followed by anterior debridement with cage

reconstruction. However, in cases of patients with kyphosis or major neurological involvement, posterior vertebral column resection and multi-level posterior column decompression followed by anterior interbody fusion with cage to relieve the compression on the spinal cord."(20)(21)

Spinal tuberculosis belongs to category 1 of the WHO category treatment of tuberculosis. This category consists of two phases: The initial phase takes about two months with four main anti-tuberculous drugs (INH, rifampicin, streptomycin and pyrazinamide). Followed by 4 months of two anti-tuberculosis drugs (INH and rifampicin). The treatment plan usually continues to 9 months at least.(8)(22)

Spinal decompression with L1, L2 Laminectomy was done to our patient in order to relieve the compression on the spinal nerves, followed by L1,2 corpectomy with interbody cage and TPSF T11-L4 (Figure4), due to kyphotic deformity on x ray follows up, with complain of mechanical back pain post operation (Laminectomy).

Surgical intervention followed by Rifampicin -isoniazid 300 mg, and pyridoxine for 1 year with frequent follow up with MRI and liver enzymes. After medical treatment, spine stabilization and fixation surgery, the neurological symptoms had improved. Finally, the patient was referred to the pulmonology department for the consultation about the accurate regimen of anti-tuberculosis drugs and multi-disciplinary team of orthopedic surgeon, neurologist and pulmonologist would follow the patient for future assessment of the disease and progression of the condition.

CONCLUSION.

Spinal tuberculosis is a serious condition that can affect the vertebrae, it is also associated with neurological complications especially in advanced cases. The condition is usually documented in HIV or immune compromised patients. However, this is not the case in our study and only the profession and country where the case belongs are the predisposing factors. The most common presentation of the condition is lower back pain together with constitutional symptoms like night fever, sweating and progressive loss of weight. Spinal TB is initially suspected by radiological findings on X-ray (Together with the clinical presentation and the patient's suggestive history) and best diagnosed by MRI.

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