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POTT'S DISEASE IN A PAEDIATRIC PATIENT

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Abstract
This case report discusses the diagnostic and therapeutic challenges associated with Pott's Disease, an extrapulmonary manifestation of tuberculosis, especially in regions with varying TB prevalence and in individuals with a family history of TB. We present the case of a 12-year-old girl from the UAE who presented with a 3-month history of intermittent backaches, low-grade fever, and night sweats. Her father had a prior diagnosis of pulmonary TB, increasing her risk of TB infection. When it comes to the diagnostic interventions, it included a thorough clinical examination, laboratory tests (CBC, ESR, CRP, Tuberculin skin test), and radiological imaging (X-ray and MRI of the spine). The patient was started on a multi-drug pharmacological treatment regimen for TB. Despite non-compliance with treatment for a period, the patient eventually responded well to pharmacological treatment, showing clinical and radiological improvement. This case underscores the importance of early suspicion, comprehensive diagnostic evaluation, and patient education in managing Pott's Disease. It also highlights the need for a combination of imaging studies and microbiological tests for diagnosis and the consideration of surgical intervention in complicated cases. As global migration and urbanization trends continue, understanding and managing such cases is crucial for public health efforts to combat the spread of tuberculosis. This case emphasizes the significance of prompt diagnosis, patient-centric treatment strategies, and patient and family education for successful treatment outcomes.
Keyword: Paediatric TB, spinal tuberculosis, Pott's Disease.

INTRODUCTION

Spinal tuberculosis, also known as Pott's Disease, is the most common pattern of extra pulmonary tuberculosis [1]. It has increased rapidly around the world in recent years, especially in the undeveloped and developing countries. It affects the spine in up to 50% of all osteoarticular tuberculosis patients [1]. Spinal tuberculosis occurs most commonly in children and young adults [2]. The clinical symptoms of spinal tuberculosis in children are often insidious and include back pain, fever, paraparesis, sensory disturbance and bowel and bladder dysfunction [2]. It can also lead to bone destruction, spinal deformity and neural complications [2]. Globally, the prevalence of Pott's Disease differs depending on the occurrence of tuberculosis in the respective area. Within the MENA region, factors like population size, availability of healthcare, socio-economic conditions, and migration all have an impact on the prevalence of tuberculosis, and therefore its extrapulmonary manifestations [3]. In light of its gained popularity as an international destination and migration, the UAE has experienced an increase in their cases recently [4]. This case study examines the diagnosis and management of a 12-year-old girl from the UAE diagnosed with Pott's Disease. Her case gives a fascinating insight into the clinical complexities and decision-making processes in managing such uncommon manifestations locally, particularly with her family history of pulmonary TB. This case study highlights the importance of early detection, extensive diagnostic testing, and devoting to treatment for the best possible results.

CASE STUDY

A 12-year-old girl presented to the orthopedic outpatient with a 3-month history of back aches, the pain was intermittent, increasing with playing but not associated with any neurological manifestation. There was a history of low-grade fever and sweating more at night. There was no history of other constitutional symptoms. She was born in UAE and was vaccinated at birth with BCG. She is one of 5 siblings; her father was found to have pulmonary TB and has been on treatment for the last 8 months. On examination, she was found to have mild pallor, scar of BCG, right axillary small discrete lymphadenopathy, and no significant finding in cardiovascular, respiratory, and abdominal examination. Examination of the back revealed a kyphosis and tenderness at the T9 level with thoracolumbar scoliosis to the right, with no paraspinal spasm, swelling or abscess. She had no motor or sensory deficits.

Her cell blood count (CBC) showed hypochromic microcytic anemia of 9.7 g/dL; Erythrocyte Sedimentation Rate (ESR) was 40 mm/hr. and C reactive protein (CRP) was 16.5 mg/l. Her liver function test was normal, and Brucella Abortus Antibody was not significant. Sputum for AFB was negative on 3 occasions. The Tuberculin skin test was 20 mm with induration and vesicles. Chest x-ray showed no lung infiltration or hilar lymphadenopathy. X-ray of the spine showed thoracolumbar scoliosis at T 10, 11 levels to the right with paravertebral abscess and destruction of the intervertebral disc space at T10, 11. MRI spine showed multifocal TB spondylitis with large paravertebral and small epidural abscess at D10-11 level. (figure 1) (figure 2)

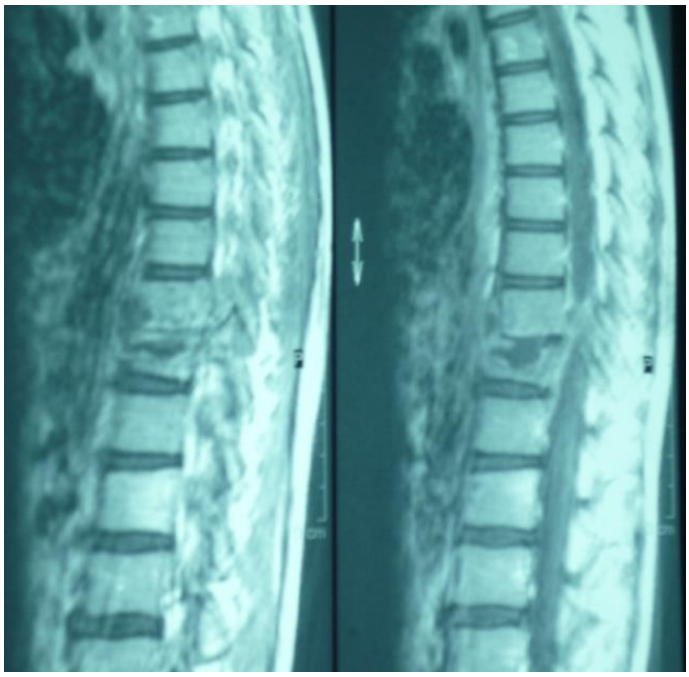

Figure 1: Sagittal spine MRI of the patient showing involvement of T10, 11 with destruction of intervertebral space.

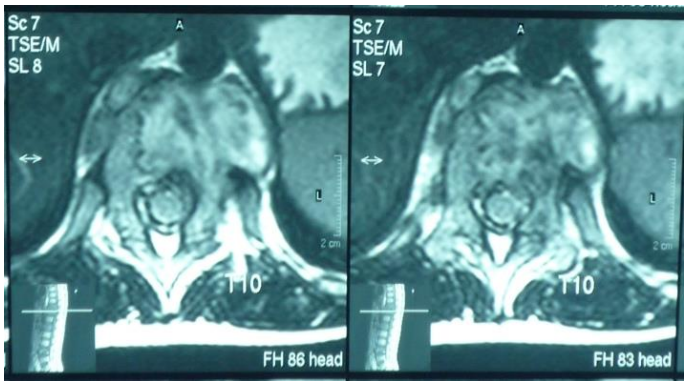

Figure 2: Axial spinal MRI of the patient showing paravertebral abscess.

She was started on an Intensive course of Pyrazinamide 600 mg tablets OD, INH 300 mg tablets OD, Rifampicin 300 mg OD, and Ethambutol 750 mg OD. She was not compliant with treatment as she was on and off treatment for 5 months. Then, she was kept on a maintenance course of INH 400 mg OD, and Rifampicin 400 mg OD for 8 months. The patient responded fully clinically as well as radiologically and did not need any surgical intervention.

DISCUSSION

Mycobacterium tuberculosis is a Gram-negative bacterium that causes Tuberculosis, one of the most prevalent diseases in the world. Pulmonary disease is the most typical manifestation because it mostly affects the lungs. But TB presents in a variety of ways since it's a multisystemic disease. One of the extra-pulmonary TB manifestations known as Pott's disease is tubercular spondylodiscitis [5]. The Incidence of tuberculosis in the spine accounts for 10-20% of all extra-pulmonary cases [6]. It affects all age groups with children as a high-risk group due to the increased vascularization of their spine [7,8]. Hematogenous dissemination from an infection site, which is frequently unknown, is the main way spinal tuberculosis spreads. About 50% of the time, a concurrent active pulmonary disease is present [6].

Long-term contact with infected individuals, immunodeficiencies (HIV, alcoholism, drug misuse), overcrowding, malnutrition, poverty, and a poorer socioeconomic status are some established risk factors for TB. [9] In our case, the patient's father was diagnosed with TB months back, so this increased the child's risk of being infected with the disease.

The clinical presentation of spinal tuberculosis is variable. The symptoms vary depending on the illness's duration, severity, location of the lesion, and presence of associated complications such deformity and neurological deficiency [10]. The most common symptoms associated with Potts disease include back pain, fever, weight loss, night sweats, and fatigue [11]. In the present case, the patient was complaining of 3-month history of back ache that was intermittent and progressive. Back pain is usually the first manifestation of Pott's disease and can be the only presenting symptom, causing delay in the diagnosis and treatment [4]. Besides back pain, low grade fever and night sweats were also present, without neurological manifestations. On examination, the patient developed deformity in the spine, kyphosis, tenderness at T9 level as well as thoracolumbar scoliosis, with no visible abscess or swelling. The findings are considered one of the clinical manifestations of Pott's disease besides cold abscess and neurological deficiency [12]. This is due to the normal anatomy of the children's vertebra, as children tend to have more cartilaginous vertebral bodies compared to adults, which in return leads to rapid loss of cartilage and severe deformities [8].

Generally, Pott's disease in children is suspected and diagnosed based on clinical presentations and imaging. Histopathological evidence is obtained when the classical spinal TB findings are absent and require further confirmation [11]. Different radiological Imaging can be used such as X-ray, CT scan or MRI. TB causes destruction of the vertebral bodies with the relative intervertebral discs which will lead to vertebral collapse. Radiological findings of cases with spinal TB shows different levels of kyphosis, destructive process, paravertebral abscess, epidural extension or soft tissue calcification depending on the extent and severity of the disease [13]. In our case, x ray of the spine showed thoracolumbar scoliosis at T 10, 11 levels to the right with paravertebral abscess and destruction of the intervertebral disc space at T10,11. Additionally, spinal MRI was done, and it showed multifocal TB spondylitis with large paravertebral and small epidural abscess at D10-11 level. This is supported by the literature that MRI determines the extent and nature of the bony destruction as well as the soft tissue's involvement [14].

Microbiological and laboratory investigations are important for confirmation of the disease and exclusion of other causes. In children, however, bacteriological sampling is not always possible due to technical difficulties and the fact that TB in young children is a paucibacillary disease [15]. The Acid-fast bacilli (AFB) test is positive in less than 15% of children with TB [16]. Our patient had negative AFB test on three occasions. Mantoux Tuberculin Skin Test (TST) assesses patient's exposure to TB by their immune response to the TB proteins. The size of the induration is determined by the individual's medical risk factors. In immunocompromised children (HIV-positive or severely malnourished), an induration of more than 5 mm in diameter is considered positive. In all other children (with or without BCG vaccination), an induration of more than 10 mm in

diameter is considered as positive [15]. TST was positive in our patient with 20 mm of induration and vesicles.

Erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) and white blood count (WBC) are also common workup used in investigation of TB cases [8]. In a conducted retrospective study of children with pulmonary and extra pulmonary TB, the study showed elevated mean of ESR, CRP value, and WBC count with decreased haemoglobin [17]. Our patient similarly had hypochromic microcytic anaemia of 9.7 g/dL; elevated ESR of 40 mm/hr, and CRP of 16.5 mg/l. Interferon-Gamma Release Assays (IGRAs), measure interferons produced in response to tubercular antigens [8]. Studies showed similar results between positive IGRA and TST [18]. In our patient TST provided a satisfactory result and IGRAs wasn't done.

The treatment of Pott's disease involves a combination of medical treatment and surgical intervention for possible complications [19]. Based on WHO consolidated guidelines in tuberculosis management in children and adolescents, pharmacological regimens are chosen based on the site and severity [19]. Patients suspected or confirmed with osteoarticular TB, should be treated with four drug regimens (rifampicin, isoniazid, ethambutol, and pyrazinamide) for 2 months, followed by two regimens (isoniazid and rifampicin) for 10 months for a total of 12 months treatment [19]. For young children with multidrug- and rifampicin-resistant TB, the use of bedaquiline and delamanid is recommended [19]. Our patient was started on a pyrazinamide, isoniazid, rifampicin, and ethambutol followed by maintenance course of isoniazid and rifampicin. Usually in the presence of deformity or neurological deficit, patients may undergo surgery to prevent irreversible damage [2]. Our patient did not require surgical intervention as she greatly improved clinically and radiologically.

CONCLUSION

In conclusion, Pott's Disease, though a rare extrapulmonary manifestation of tuberculosis, presents significant diagnostic and therapeutic challenges, particularly in regions where TB prevalence varies and in families with known TB history. The diagnosis of a 12-year-old from the UAE underscores the complexities surrounding its detection and management. The patient's relatively non-specific initial symptoms, such as backaches and low-grade fevers, emphasize the importance of early suspicion and a comprehensive diagnostic evaluation. A combination of imaging studies and microbiological tests remains central to confirm diagnosis.

Her sporadic adherence to treatment draws attention to the challenges faced in real-world scenarios, highlighting the necessity of robust patient education, counselling, and regular follow-up. While pharmacological measures are primary in managing Pott's Disease, clinicians should also be attuned to the possibility of surgical interventions in resistant or complicated cases. As global migration and urbanization tends to continue, understanding and managing such patients is imperative not just for individual patient outcomes but also for broader public health initiatives against the spread of tuberculosis. This case report reinforces the significance of swift diagnostic measures, patient-centric treatment strategies, and the indispensable role of patient and family education in ensuring treatment success.

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