



## Case Report on Pott's Spine

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### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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### ABSTRACT

**Introduction:** Extra spinal infection causes Pott's illness, which is a spine infection. This condition is extremely rare. It is also called as tuberculosis spondylitis. Due to haematogenous spread over sites, it often involves the lungs and multiple vertebrae. It causes a kind of tuberculous arthritis of the intervertebral disc space. The vertebral body's front part, near to the plate underneath the chondral i.e. subchondral plate, is the most prevalent location of involvement in the lower thoracic vertebrae. If anyone vertebra gets affected the disc is normal and if both it cannot receives nutrients, and collapses and spinal damage that results in kyphotic spine deformity. 45 years old male patient admitted to AVBRH with the chief complaints of weakness of bilateral lower limb since 1 month, back pain, loss of weight, and loss of appetite.

**Clinical Findings:** Weakness of bilateral lower limb since 1 month, back pain, loss of weight, loss of appetite.

**Diagnostic Evaluation:** Generally, we examine medical history, symptoms, and physical examination of a patient. The patient has been undergone with the investigation like x-ray, MRI, CT scan, CBC, ESR and mantox test. Patient has elevated haemoglobin level i.e. 8.9%. RBCs – normocytic mildly hypochromic platelets. Patient also has elevated sodium and potassium level.

**Conclusion:** Patient has undergone surgical management i.e. spinal fixation. Patient showed minor signs of progress and thus he was asked to undergo the medical management and was kept under observation.

**Keywords:** Pott's spine; spondylitis; haematogenous; kypotic deformity.

## 1. INTRODUCTION

In 1779, cervical Potts described spinal tuberculosis for the first time. Extra spinal infection causes Pott's illness, which is a spine infection. This condition is extremely rare. It is also called as tuberculosis spondylitis. It affects the musculo-skeletal system of the body. The infection is spread via haematogenous which mainly affects paravertebral soft tissues, vertebral body, epidural space and intervertebral disc which mainly results in narrowing of the spinal cord and causes neurologic complications. Tuberculosis is becoming more common in both developing and developed countries. In 2005, 8.8 million new tuberculosis patients were diagnosed. Pott's disease is relatively common in musculoskeletal TB. Pott's disease affects between 1-2 percent of people around the world [1].

Extra pulmonary tuberculosis is the most frequent type of tuberculosis in the spine. And has rapidly increased the prevalence around the world where more than 50% of tuberculosis cases exhibit the skeletal system. Thoracic tuberculosis is more common and it causes kypotic deformity and spinal cord injury [1].

Weakness, back pain, loss of weight and paraparesis, with a very low progression, loss of appetite, intermittent fever, anorexia, night sweat are generally the common signs and symptoms of Pott's spine disease. It can cause bone loss, spinal deformity, and neurologic and orthopaedic problems. MRI, CT scan, X-ray, Mantoux test are the main diagnostic evaluation done to identify the diagnosis.

Management of Pott's spine is done with both surgical as well as medical management [2].

**Patient identification:** A male patient aged 45 years old admitted to Neuro ICU, AVBRH on 15<sup>th</sup> February 2021. After undergoing several investigations he is diagnosed with Pott's Spine.

**Present medical history:** A male patient aged 45 years old admitted to Neuro ICU, AVBRH on 15<sup>th</sup> February 2021 with the complaints of weakness of bilateral lower limb since 1 month, back pain, loss of weight, and loss of appetite. Patient also complains about having difficulty while passing the urine and constipation.

**Past medical history:** My patient has past medical history of tuberculosis.

**Present surgical history:** Patient has undergone the surgical management. He has undergone the surgery i.e. spinal fixation.

**Past surgical history:** Patient has the past surgical history of hernioplasty.

**Family history:** There are four members in the family of my patient. There was no any congenital history. All other members in the family were healthy and didn't have any health issue.

**Personal history:** The patient has an unhealthy habit of consuming alcohol. He has consumed 200 to 400 ml of alcohol everyday.

**Past intervention and outcomes:** My patient was diagnosed with tuberculosis 2 years back where he was admitted to private hospital and took the further management. The treatment was found effective and patient does not develop complication since then.

**Clinical findings:** Pott's spine at D<sub>11</sub>-D<sub>12</sub> L<sub>2</sub>-L<sub>3</sub> vertebrae, Fever (Temperature: 100°F), Back pain, tenderness, paraplegia, kypotic deformity, elevated haemoglobin (8.6%) and sodium (136mEq/L) and potassium level (4.3mmol/L).

**Etiology:** The main cause underlying tuberculosis is Mycobacterium genus complex. The infection causes a granulomatous inflammatory response that includes Langhans-type large cells, caseating necrosis, lymphocytes, and epithelioid cells. Age, gender, immunodeficiency, alcoholism, and repeated exposure to infectious patients and substance misuse, overcrowding, malnutrition, violence, and a poor socioeconomic condition are the factors that contribute to the infection.

It causes a kind of tuberculous arthritis of the intervertebral disc space. The vertebral body's front part, near to the plate underneath the chondral i.e. subchondral plate, is the most prevalent location of involvement in the lower thoracic vertebrae. If any one vertebra gets affected the disc is normal and if both it cannot receive nutrients, and collapses and spinal injury, resulting in kypotic spine (spine deformity).

**Physical examination:** A complete head to foot assessment was done. While doing physical examination, patient looks weak malnourished and dull, pallor was found. Patient was conscious. Localized tenderness, muscle spasm, difficulty in movement, spinal deformity with thoracic kyphosis was found. Patient was also having back pain, paraplegia and impaired sensation. He was having fever and weight loss.

**Diagnostic assessment:** The patient has been undergone with the investigation like x-ray, ESR, MRI, CT scan, CBC, and mantox test [2].

Blood test: Hb%- 8.6 gm%, total RBCs-3.25 millions/cumm, total WBC count-17800/cumm, Total platelet count-1.84/ $\mu$ l, monocytes-04%, granuocytes-85%, lymphocytes-10, RDW-18.9%, eosinophills-01%, MCHC-33.1%, MCV-79.7cu.mm, MCH-26.4picogram.

Peripheral smear: RBCs – normocytic mildly hypochromic platelets, adequate on smear. No haemoparasite seen.

ESR (Erythrocyte sedimentation rate): 120mm.

Kidney function test: Sodium-136mEq/L and potassium level- 4.3mmol/L.

MRI: Imaging protocol: Sagittal TSE T2 WI, Sagittal SE T1 WI, and STIR Coronal, STIR Sagittal, Axial T2, Axial T1.

MR SHOWS: Altered narrow signal with mild reduction in heights of D12 and L3 vertebrae seen. Significant enhancing intraspinal and paraspinal soft tissue is seen at these levels, Moderately compromising dorsal and lumbar canal, conus, cauda equina at respective levels, severely compromising bilateral neural canals and exiting nerve roots at D11/12, L2/3 levels.

- Soft tissue is seen extending in bilateral psoas muscles regions.

Diffuse disc bulges pierce the thecal sac and lateral recesses at the L4/5 levels, severely jeopardising bilateral neural canals and exiting nerve roots.

- At the L3/4 level, there are diffuse disc bulges moderately compromising thecal sac, lateral recesses, severely compromising bilateral neural canals and exiting nerve roots (Left > Right).

- Ligament flavour appears normal

- No evidence of any Spondylolysis, Spondylolsthesis Whole spine screening reveals, Posterior disc bulges are noted at C5/6, C6/7

IMPRESSION: MRI of dorsal spine

- Altered marrow signal with mild reduction in heights of D12 and L3 vertebrae seen. Significant enhancing intraspinal and paraspinal soft tissue, Moderately compromising dorsal and lumbar canal, conus, cauda equina at respective levels, severely compromising bilateral neural canals and exiting nerve roots at D11/12, L2/3 levels. Plasmacytomas is a plasma cell dyscrasia in which a plasma cell tumour grows within soft tissue or within the axial skeleton.

- At the L4/5 levels, there are diffuse disc bulges severely compromising bilateral neural canals and exiting nerve roots.

At L3/4 levels, there are diffuse disc bulges moderately compromising thecal sac, lateral recesses, severely compromising bilateral neural canals and exiting nerve roots(Left > Right).

**Therapeutic intervention:** Surgical management i.e. spinal fixation is done.

Dots therapy was given. Patient was treated with 75mg ionized, 150mg rifampain, 400mg pyrazinamide, 275mg ethambutol, and Inj. Streptomycin of dose 0.75 mg [3].

Medical management: Inj. Streptomycin 750mg, Tab. AKT, Inj. Ceftriaxome 1gm, Inj. Amikacin 500mg, Tab pantop 40mg, Inj.emset 4mg, Inj. Neomol 100 ml, Inj. Dexamethasone 4mg.

## 2. DISCUSSION

A male patient of age 45 years from nandgaon peth, Amravati district was admitted to NEURO ICU, AVBRH on 15<sup>th</sup> FEBRUARY 2021 with the complaints of weakness of bilateral lower limb since 1 month, back pain, loss of weight, and loss of appetite. He was diagnosed with tuberculosis 2 years back for which he tooked the treatment from private hospital. As soon as he was admitted to hospital several investigations were done and appropriate treatment was started and was kept under the observation.

From year 1985 to 1996, a study was done of all the cases of Pott's disease in Turkey. They found 694 cases in total. In the first half of the study period (1985-1990), 19% of the patients were registered, and 81 percent in the second half (1991-1996). Leg fatigue (69%), gibbus (46%), discomfort (21%), and palpable mass were the most common symptoms (10%). Anti-inflammatory and decompressive surgery found out to be the most effective treatment for Pott's spine. In 414 of the 694 patients, follow-up information was available, and 2% of death which is equal to ten persons occurred, in which one person died intraoperative and the remaining nine died postoperatively. This meta-analysis shows that Pott's disease, which causes paraplegia, is still a significant problem in Turkey. When patients are found with neurological complications it indicates compression and deformity of spinal cord. The current study found that if immediate decompression occurs on the onset of the disease, the neurological involvement is almost benign [4].

A study done on clinical characteristics of 1378 Spinal Tuberculosis Inpatients in South-Central China's general hospital. Between January 2007 and December 2016, inpatients hospitalised for STB had their medical history reviewed to five big comprehensive hospitals in Changsha, Hunan, China were examined in this retrospective analysis. Clinical, laboratory, and imaging examinations, as well as pathological analysis of biopsy specimens, was used to confirm the diagnosis of STB. To arrive at a diagnosis, the following criteria were used: Back discomfort, spinal deformity, neurological issues such as numbness and tiredness, Fever of a low severity, nocturnal sweats, and emaciation, as well as dysesthesia, dyskinesia, and paralysis, are all indications of tuberculosis (TB) systemic toxicity symptoms (STS). Also, Erythrocyte Sedimentation Rate and CRP levels, TB immunoglobulin, and tuberculin test results; CT scan and MRI and also symptoms such as spinal bone depletion, intervertebral space involvement, kyphosis, paravertebral abscess development, and dural sac compression. When a definitive diagnosis was difficult to make, diagnostic anti-TB medicine was helpful; the gold standard of diagnosis was clinical proof of tuberculosis, such as classic caseous necrosis associated with tuberculosis microscopically. All STB patients were given the HREZ anti-TB chemotherapy treatment, which includes 450 mg of rifampin per day, 300 mg of isoniazid per day, 750 mg of ethambutol per day, and 750 mg of pyrazinamide

per day for 12–18 months. During anti-TB chemotherapy, kidney and liver function were controlled. STB surgery was performed for a variety of reasons, including the onset or a poor response to medical therapy, increasing neurological issues, a chronic or growing spine malformation, long-term back stiffness due to spinal failure, and an adverse reactions to medical attention, bone loss of varying degrees can occur as a result of STB surgery. Two categories of STB patients were established based on their admission year: Group A was in charge from the year 2007 in the month of January to year 2011 in the month of December, while Group B was in control from January month 2012 to December month 2016, between the two groups, factors were compared. The changes in the trend of each variable were added together. Researchers looked at the relationship between PTB and STB diabetes, and Diabetes is a significant complication of STB, that is caused primarily by PTB. Follow-up information was gathered via telephone conversations, e-mails, and repeat appointments to the outpatient department. The word "cure" was defined as the absence of clinical symptoms for three months, a normal ESR, radiographic diagnosis of bone union in lesions, and no return of TB lesions within two years of therapy [5].

A study was done on Tuberculosis of the thoracolumbar spine is treated surgically. 132 patients with thoracolumbar TB were surgically treated in 6 institutes between year 1999 and year 2015 in the month of January, using a technique i.e. anterior-only technique, an anterior mixed with posterior approach, and a technique called as posterior-only technique (n = 31, group C). The patients were given conventional drugs i.e. anti tuberculosis drugs before and after surgery, and they were followed up on a regular basis afterward. Clinical complaints, nerve activity, the rate of erythrocyte sedimentation were monitored, and X-rays or computed tomography were used to assess kyphosis correction and bone fusion. At the time of the most recent follow-up, both patients experienced bone fusion, pain alleviation, and neurological treatment. Each of the three surgical operations altered the Cobb angle, but at the last follow-up, the Cobb angle exhibited symptoms of failure. Comparisons showed a discrepancy in angle loss between the three groups at the most recent follow-up; B and C group outperformed group A in keeping the adjustment [6].

A study was done to identify Pott's disease in children. This research included 37 children (under the age of 15) who had spinal TB and had been treated in the previous six years. These children's demographics, clinical profiles, surgical interventions, and outcomes are all detailed. Hematogenous spread from an unknown original site of infection is the major route of infection in children with spinal TB. In around half of the cases, there is a coexisting active pulmonary illness. The male-to-female ratio was 1.8, and the average age ranged from 4 to 15 years. Only six individuals (16.2%) experienced neurological symptoms, while thirty patients (81%) reported increasing inflammatory radicular pain and most injured part of the spine was the lumbar spine (23 cases). Antituberculous chemotherapy (Regimen 2SRHZ/10RH) combined with 3-month spinal immobilisation was beneficial to all patients. The surgical therapy was recommended in seven individuals due to the presence of a significant bilateral psoas muscle abscess in one patient and significant neurological symptom in the other six. All of the cases, including those with neurological symptoms, had a positive outcome. There were no deaths, and the patients' follow-up periods ranged from one to four years. All of this research has something to do with Pott's disease [7].

A study was done by Reinoso J, a case of a 17-year-old male with a history of pleural effusion that presented with severe back pain. Several imaging studies reported an aggressive paravertebral neoplasia at the thoracic levels. A surgical biopsy was performed, and the procedure revealed bone fragmentation, which prompted the need to rule out Pott's disease per current recommendations. Biopsy and subsequent positive QuantiFERON-TB Gold test confirmed spinal tuberculosis [8].

A 21-year-old Guatemalan male presented with six months of headaches and neck pain. MRI of the cervical spine demonstrated multiple inflammatory processes, both within the paraspinal soft tissue as well as within the bone itself, including the appearance of total destruction of C1. Microbiologic confirmation of *Mycobacterium tuberculosis* was made by fine needle aspiration. The patient was treated medically with appropriate anti-tuberculosis therapy coupled with aggressive pain control and careful neurological follow-up. Follow-up MRI at the end of treatment showed complete radiographic resolution. The patient had no

neurologic sequelae. Indications for surgical intervention for management of Pott's disease (TB of the spine) are based on the presence of neurologic symptoms and/or the inability to manage pain, not on imaging alone. Aggressive pain management coupled with close neurologic follow-up and institution of appropriate TB treatment can often avoid surgical intervention, which generally involves the placement of hardware with resultant downstream management issues [8].

### 3. CONCLUSION

Extra spinal infection causes Pott's illness, which is a spine infection. This condition is extremely rare. It is also called as tuberculosis spondylitis. It affects musculo-skeletal system of the body. The infection is spread via haematogenous which mainly affects paravertebral soft tissues, vertebral body, epidural space and intervertebral disc which mainly results in narrowing of the spinal cord and causes neurologic complications. It is important to identify the diagnosis at early stage so that it may not cause further complications. After diagnosis proper management should be done. My patient show good improvement after the surgical management and was kept on observation under medical management.

### CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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