

Physiotherapy Management of Pain and Disability in Pott's Spine: A case study

Abstract

Background: In developing countries Tuberculosis is one of the main reason for mortality and motility. Tuberculosis is a bacterial disease caused by Mycobacterium tuberculosis. It is highly contagious disease. The prevalence rate of TB was estimated in 2016 as 10.4 million as per the World Health Organization. TB is commonly associated with HIV Patients. TB can affect both the genders but men are more prone as compare to females. The spinal TB is usually diagnosed by clinical features and radiographs, MRI and CT scan. The Management of Spinal TB includes chemotherapy, surgical management and physiotherapy rehabilitation.

Objectives: The objective of this case study was to provide the relief to the patient in terms of pain as well increase the functional independence. This case study evaluates the effect of physiotherapy in the case of low back due to the post symptoms of Potts's spine.

Case description: A 20 year old male visited the physiotherapy department with the complication of low back pain with the severity of 7 out of 10 on NPRS and disability index of 22%. He presented with the past history of Pott's spine. The X-ray and MRI findings revealed the post effects of his old condition as there is block vertebra and there is dissolution of the disc at LV3-LV4 with the normal spinal alignment but there is radiating pain in the right leg.

Outcome measures: The outcome measures or the assessment tools used for this study was Numerical pain rating scale for the pain, Manual muscle testing to check strength of muscles and the ODI for LBP.

Result: The study findings shows progressive changes in the parameters taken in the beginning of the study. There was reduction in the pain and decrease in scoring of the low back disability index.

Result: the study findings shows significant changes in the parameters taken in the beginning of the study. There was reduction in the pain and Oswestry back disability index also shows improvement.

Conclusion: This study concluded that the physiotherapy treated provided beneficial effect on pain and improves the disability index as well as improves the functional capabilities of person having low back pain due to post symptoms of pott's spine. This study is an addition to the evidence about the physiotherapy rehabilitation progressive effects.

Key words: Physiotherapy, Pott's spine, Pain, Disability.

Introduction

Tuberculosis is a bacterial disease caused by Mycobacterium tuberculosis. It is highly contagious disease. The Traces of tuberculosis has been found since the ancient times, it is very much evident from the fact that some of the mummies from the Egypt and Peru time were having this disease presence. Sir Percival Pott described TB Spine and its clinical presentation so the condition is popularly known as Pott's spine (Garg & Somvanshi, 2011; Rajasekaran et al., 2018).

The prevalence rate of TB was estimated in 2016 as 10.4 million as per the WHO, in which European countries contribute only 3% and the Asia (South East part) alone had 46.5% of total TB burden. TB is most commonly related to HIV

population. TB is found to be related to HIV as there were 251000 deaths among HIV positive people (Jiang et al., 2015). And there is an evidence of 1.2million TB deaths among HIV-negative. TB can affect both the genders but men are more prone as compare to females (WHO, 2019).

In recent years we had been facing with increasing numbers of spinal TB cases which increase the mortality and motility rate. Primary TB is a respiratory condition which starts in the lung but can travel to any organ or structure of the body. The vertebral column is most common affected extra pulmonary site (Yanardag & Canbaz, 2012). It spreads through the lymphatic drainage from intracanalicular spread, another focus of infection, or direct invasion during bacteremic stage of the disease. The most common symptom of tuberculosis is pyrexia, weight loss, cough, blood in sputum, back pain, loss of appetite, night sweats, kypho-scoliosis, lower limb neurological deficits and sphincter disturbance (Orthopaedics, 2019; Yasaratne et al., 2013). The most common site involved is thoraco-lumbar junction. There are incidence of neurologic symptoms in spinal TB varies from 10-40 percent. The incidence of spinal tuberculosis is approximately 2% of all the cases of tuberculosis and in which lumbosacral tuberculosis accounts for 2–3% (Jiang et al., 2015).

There are 2 distinct types of spinal TB in which one is the classic form and the another is atypical form. In the vertebral body anterior aspect adjacent to the sub-chondral plate is commonly involved part. Pott's can result in inclusion of any of these complications:

- Bone destruction progressively which can lead to vertebral collapse and cause kyphosis
- Cold abscess formation which results due to spread of infection into adjacent ligaments and soft tissues
- Spinal canal narrowing by the abscess formation.
- Spinal cord compression which results in neurologic deficits
- There is a risk of development of paraplegia in this condition and it's called as pott's plegia (Jain, 2016).

The spinal tuberculosis is usually diagnosed with clinical features and plain radiographs. Plain radiographs may show radiolucent lesions, joint space narrowing, anterior wedging of vertebral bodies, kyphosis, and calcified abscesses of soft tissue. The MRI and CT are used to diagnose the condition perfectly. The differential diagnosis of tuberculous spondylitis includes pyogenic spondylitis and malignancy (Dean et al., 2019).

The Management of Spinal TB includes chemotherapy, surgical management and physiotherapy rehabilitation. The standard management for spinal TB is isoniazid, rifampicin and pyrazinamide chemotherapy for a minimum of 6 months. In addition to the chemotherapy there can be surgical treatment inclusion which can be done by debridement of diseased tissues by an antero-lateral extra-pleural approach, trans-pleural anterior approach or posterior spinal fusion (Banga et al., 2018; Zhang et al., 2013).

Case description:

Mr. A with an age of 20 years came to the Out-patient department with the chief complaints of back pain. The patient is having a mesomorphic built with no habits of alcohol and cigarette consumption. He is non vegetarian. The posture and gait was normal as he entered the OPD. He was non febrile, non pallor, non dehydrated and well oriented at the time of assessment.

After taking the proper history assessment it was found out that his pain started around 2 months back in the lumbar region. The nature of the pain is not continuous and the pain severity is around 7 at the Numerical pain rating scale and he is able to do his all activities normally but the pain aggravates while working for longer duration and it relieves with rest. He contacted his physician and he suggested him to undergo the proper diagnostic test which includes X-ray of lumbar spine as well as MRI. The patient is having a past history of Pott's spine in 2013, for which he has taken the proper medication. The level is the same as the patient is experiencing the pain. Currently he is not under any medication or drugs. His physician suggested him to opt for physiotherapy management and he took two sessions of physiotherapy there in that hospital but as he was having some personal inconvenience so he preferred to continue his treatment in lovely physiotherapy Outpatient department.

On physical examination, there was mild localized tenderness over the paraspinal area of L3-L4 Lumbar region. He was able to do all active the range of motion for lumbar and all the special tests were negative except cross SLR which suggests somehow nerve impingement. On manual muscle testing it was found that his quadriceps are having grade of 4 in both the limbs and mild tightness felt in the surrounding muscles particularly hamstrings, calf.

On assessment of the diagnostic reports it was found out that there is an evidence of block vertebra at LV3-LV4 without fusion of posterior elements and rudimentary intervertebral disc within, likely acquired block vertebra secondary to the Pott's spine. There is evidence of fatty infiltration in the involved segment. The spinal curvature is normal but at the L4-L5 level there is posterior disc herniation which is causing anterior thecal sac indentation with bilateral neural foraminal compression. He is also complaining of occasional radiating pain in right leg.

The outcome measures which was used for the patient was NPRS, MMT and ODI Questionnaire (Alcántara-Bumbiedro et al., 2006). The pain severity was 7/10, MMT grading was 3+ and the score for ODI was 22%.

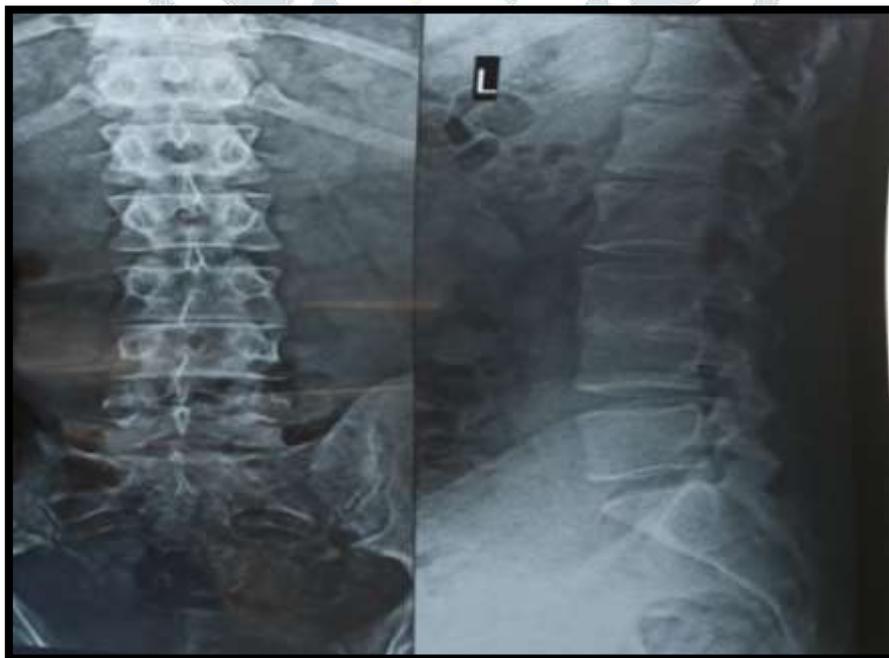


Fig: 1 Plain radiograph both views

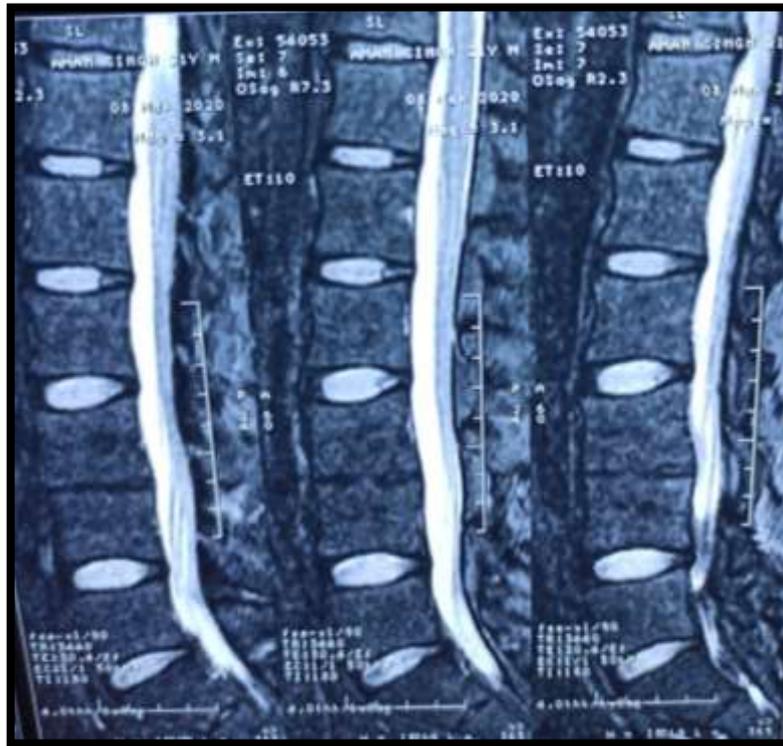


Fig: 2 Magnetic resonance imaging

Outcomes	Pre	post
NPRS	7	0
ODI	22%(moderate disability)	4%(minimal disability)

Table: 1 detailed outcomes (pre and post)

Following the detailed assessment physiotherapy treatment and rehabilitation was started on the same day.

Goals of the Treatment:

The main treatment goals of this case were as following:

- Decrease the pain severity of the patient.
- Increase the muscle strength of the muscles.
- Encourage to gain the flexibility.
- Boost the functional independence of the patient.

DESCRIPTION OF THE INTERVENTIONS USED IN THIS STUDY:

The Treatment intervention used in this case study was mainly goal oriented. Moreover the treatment used was simply the treatment which we used in physiotherapy department. The initial treatment was started to alleviate the pain for that in interferential therapy with 4 electrodes on 14th programs for 12 mins was used along with the localized application of ultrasound therapy in Pulse mode for 5 mins. The secondary focus was to maintain the effect so the rehabilitation program was started by using the stretching as well as the strengthening exercises was started for the core muscles. The strengthening exercises used in this case were particularly Back strengthening exercises given by the McKenzie. The stretching exercises were performed for the hamstrings, piriformis, and calf muscles. The exercises were prescribed according to the FITT principle after proper Exercise testing. The patient performed the exercises under the supervision in the OPD and the same set of exercises was prescribed for the home.

Rehabilitation Exercises used for the patient:

The intensity of the rehabilitation was decided according to the FIIT principle and it was modified over the time according to the need of the patient. The patient continued the treatment for one week and then home exercise program was designed for him and advised him to visit the OPD for follow up after every week.

Discussion:

Spinal tuberculosis is a serious threat to public health and it is common among the poor population. TB is of two types primary and secondary. The primary TB affects the lungs which can spread to the adjustment areas and the most common affected area is the vertebral column and that forms the secondary tuberculosis popularly known as Pott's spine and it can also lead to plegia in later stages and that is called as the pott's plegia. There are various clinical findings for Spinal TB but most common among them is fever, weight loss, cough, deformity etc. TB can be diagnosed with help of X-ray, MRI, CT scan, Cellular examination and Biopsy. The management line for Spinal tuberculosis is Anti-TB drug, surgical and rehabilitation. The spinal TB is associated with the back pain and the physiotherapy management is the best way to get relieved from the back pain. Our study was also an attempt to provide evidence regarding the physiotherapy management of back pain and disability associated with Pott's spine. Findings from this study showed that the treatment protocol we have opted to provide the relief to patient has proven to be effective. The patient reported remarkable improvement in the pain and improving the disability index. One of the limiting factors in this study is patient's fulfillment with his home program as one could not determine how well patient was doing his home program but had to depend solely on the report given by the patient. However, this study has results which could be attributed to strict adherence to principles guiding the management of low back pain in Pott's spine.

Conclusion:

The result finding of this study concluded that the physiotherapy can improve the pain and as well as improve the functional disability of the patient suffering from the back pain due to spinal tuberculosis. Although there are several evidences which have

proved that there are various methods to treat this condition which include Pharmacological, Ayurveda as well as physiotherapy. In physiotherapy there are several number of treatment approaches which can be used to resolve the suffering of the patient.

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