

Epidemiological Study of Thoracolumbar Pott's Spine at a Tertiary Care Hospital in North India

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Abstract: The vertebral column is involved in less than 1% of all the cases of tuberculosis. It can associated with major neurological deficits due to compression of adjacent neural structures with significant deformity of spinal column. Therefore, early diagnosis and management of spinal TB has special importance in preventing these serious complications. In order to extract current trends in diagnosis and medical or surgical treatment of spinal TB we performed a review with patients admitted to our hospital between 2016 and 2017. Although the development of more accurate imaging modalities such as magnetic resonance imaging and advanced surgical techniques have made the early diagnosis and management of spinal TB much easier, these are still very challenging topics. In this review we aim to discuss the diagnosis and management of spinal TB based on studies with acceptable design, clearly explained results and justifiable conclusions.

Key words: Cobb's angle, Pott's spine

Introduction

Tuberculosis is a very common disease in developing countries affecting a large proportion of population. It is a major cause of mortality and morbidity in India. There are large number of cases having extra-pulmonary tuberculosis. Vertebral column is a common site for extra-pulmonary tuberculosis. The entity is called as Pott's spine. Pott's disease, described by Sir Percival Pott, is one of the oldest demonstrated diseases affecting humans [1,2]. The thoracolumbar spine is the most commonly

affected, with less frequent involvement of the cervical and sacral spine [3]. Tuberculous spondylitis is diagnosed in the second, third, or fourth decade of life in developing nations, with a male to female ratio ranging from 1.3 : 1 to 1.7 : 1 [2,3,4-6]. Neurologic deficits with or without kyphotic deformities are a frequent sequelae of serious disease [7].

Material and methods

The study was conducted in the Department of Neurosurgery, G. R. Medical College and Jay Arogya Hospital, Gwalior,

M.P. India, over a period of one years. Of all patients with thoracolumbar Pott's spine admitted in the hospital during the study period were included. Patients of all age groups and both sexes were included in the study. These cases were analyzed for age, sex incidence, location and histopathological diagnosis. Statistical analysis was done by calculating the numbers and percentage for computing the incidence in various age groups, in sexes, location.

Study design: A meta analysis

Ethical approval: The study was undertaken after consent and clearance by the ethical committee of G.R. Medical College Gwalior.

Inclusion criteria: Of all patients admitted with thoracolumbar Pott's spine during the period 2016 – 2017 were included.

Exclusion criteria: Patients with Cervical Pott's were excluded.

Sample size: Fifty patients

Methodology: Age, Sex, Location, presenting complaints were studied.

Statistical analysis: It was done by calculating number and percentage for computing the incidence in various age groups, in sexes, location and also comparison with other studies.

Observation

The present study comprises of 50 patients of thoracolumbar Pott's spine admitted in the department of Neurosurgery, G.R. Medical college Gwalior & J.A. Group of Hospitals, Gwalior from Feb 2016 to Aug 2017.

Table 1

Age Wise distribution of patients

Age in Years	No of patients	Percentage
up to10	4	8%
11-20	4	8%
21-40	20	40%
41-60	17	34%
>60	5	10%

The mean age of patients in the study was 38.24 years.

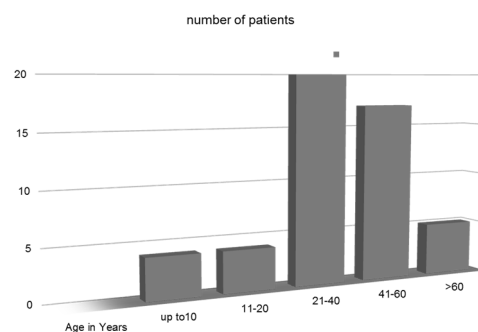


Table 2

Sex wise distribution of patients

Sex	Number of patients	Percentage
male	25	50%
Female	25	50%

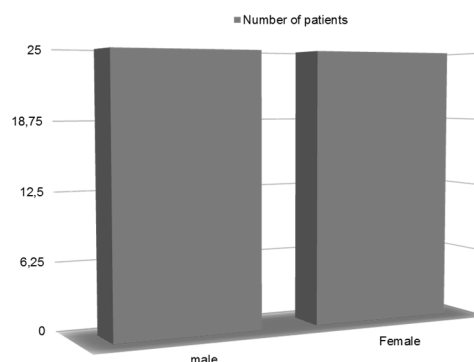
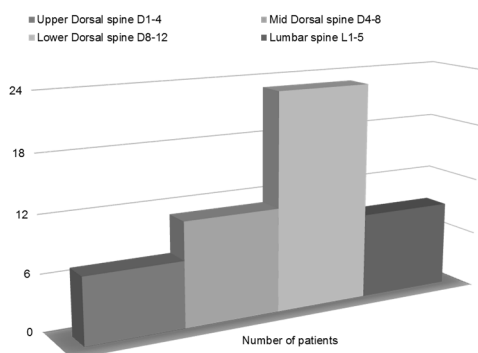


Table 3

Distribution according to location of disease

Location of disease	Number of patients	Percentage
Upper Dorsal spine D1-4	7	14%
Mid Dorsal spine D4-8	11	22%
Lower Dorsal spine D8-12	23	46%
Lumbar spine L1-5	9	18%



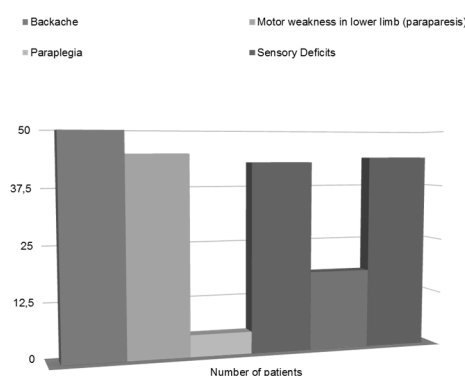
In the present study we have found that dorsal spine was most commonly affected (72%) while lumbar spine was affected in only 18% of the cases.

Table 4

Clinical features

Sign and symptoms	Number of patients	Percentage
Backache	50	100%
Motor weakness in lower limb (paraparesis)	45	90%
Paraplegia	5	10%

Sign and symptoms	Number of patients	Percentage
Sensory Deficits	43	86%
Autonomic disturbances (Bowel and bladder involvement)	18	36%
immobility	44	88%



In the present study back pain is the most common presenting symptom and found in all the patients taken in the study while motor weakness in form of paraparesis or paraplegia was the second most common symptom noted.

Discussion

It is estimated that almost six billion people are infected with TB and over nine million new cases of active TB occur annually with two to three million deaths. Extra pulmonary TB accounts for about 15–20% of all cases and nearly 1–3% of patients suffering from TB have involvement of the skeletal system.

The present study has been carried out in the department of neurosurgery, G.R. Medical college, Gwalior on the patients of

the thoracolumbar Pott's spine during February 2016 to August 2017. Total 50 cases of thoracolumbar Pott's spine were studied .

In present study patients have found that thoracolumbar Pott's spine presented in age group ranging from 4 years to 68 years, with mean age of 38.24 years.

In present study we have found that there were 25 (50%) male and 25 (50%) female patients.

On comparison with various studies we found a near similar age and sex incidence.

Table 5

Age and sex wise distribution of the patients

s.n	Study	Age group (years)	Mean age (years)	Sex ratio (M:F)
1	Present Study	4-68	38.24	50:50
2	M. Ehsaei et al. (8)	5-80	42.5	48:52
3	Park et al. (9)	10-76	44	50:50
4	Kenyon et al. (10)	14-65	29	47:53
5	Su et al. (11)	10-88	44.5	50:50
6	Barriere et al. (12)	20-76	42	56:44
7	Alothman et al. (13)	15-80	53	53:47
8	Solagberu et al. (14)	2-70	27	48:52

Location wise distribution

In this study, out of fifty patients with Pott's disease of the spine, thoracic spine was the most affected levels of the spine; where in 34 patients (68%) was found to be affected with tuberculosis. In 7 cases (14%) the disease affected the thoracolumbar vertebrae (D12-L1) and in 9 cases (18%) it was in the lumbar spines.

Table 6

Location wise distribution

S.N.	Study	thoracic (%)	Thoracolumbar (%)	Lumbar (%)
1	Present study	68	14	18
2	M. Ehsaei et al. (8)	46	10	33
3	Park et al. (9)	78	11	20
4	Kenyon et al. (10)	65	-	41
5	Su et al. (11)	33	17	42
6	Barriere et al. (12)	48	0	21
7	Alothman et al. (13)	55	-	36
8	Solagberu et al. (14)	24	24	44

Clinical features

Among the 50 patients studied the most common symptom was back pain 50 (100%), fever detected in 12(24%), malaise in 9(18%) and weight loss in 25(50%) of cases. In neurologic examination 45(90%) had paraparesis. 43(86%) had sensory loss, 18(36%) of patients complained of sphincter problem, and immobility 44(88%) cases.

Table 7

Clinical features

S.N.	Study	Back pain	Paraparesis	sensory loss	Autonomic disturbances
1	Present study	100	90	86	36
2	M. Ehsaei et al. (8)	85	64	45	30
3	Elbashir G Ahmed et al. (15)	66	72	70	-
4	Fam et al.	100	-	-	-

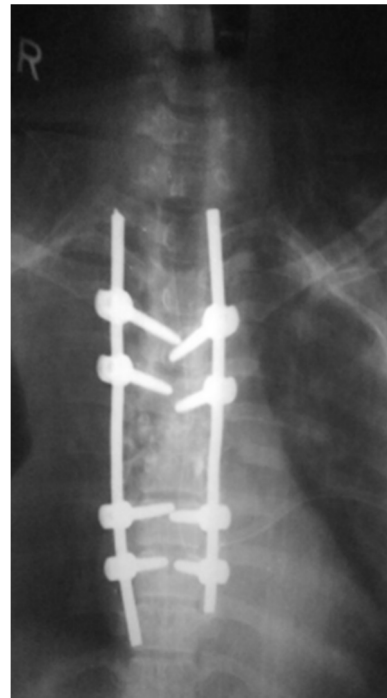
S.N.	Study	Back pain	Paraparesis	sensory loss	Autonomic disturbances
	(16)				
5	Pertuiset et al. (17)	97	-	-	-
6	Leibert et al. (18)	100	-	-	-
7	Puigdengolas et al. (19)	100	-	-	-

Table 8
Type of operation performed

operative procedure	Number of patients	Percentage
Decompression alone	25	50
Decompression with instrumentation	25	50

Table 9
Comparison of effectiveness between both procedure after 6 month

Sign & Symtoms	Patients got relieved by Decompression alone %	Patients got relieved by Decompression with instrumentation %	P-Value
Pain relief	96	80	0.831
improvement in power	77	78	0.977
improvement in sensation	71.5	91	0.598
improvement in Autonomic system	25	50	0.466
Mobility	77	91	0.716
improvement in Cobb's angle	28	84	0.0312



Post op xray of patient operated for D4-5 Pott's spine by Decompression with instrumentation



Intra Op images showing decompression with instrumentation and decompression alone.

Following conclusions were derived from the study:

- The incidence of disease was equal in both males and females.
- Mean age was 38.24 years and ranging from 4 years to 68 years.
- Dorsal spine was most commonly involved and in dorsal spine lower dorsal spine is involved most commonly.
- Backache was the most common presenting symptom (100%) and patient came to the hospital with motor weakness in 90% cases.
- All the cases were proven histologically to be tubercular in origin.
- No death was recorded in the present study.
- Decompression with instrumentation group is the surgical procedure of choice for thoracolumbar Pott's spine as this is simple, safe procedure with improved stability of spine and improved and early mobility on long term follow up.

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