

A Prospective Study of Thoracolumbar Pott's Spine Treated at a Tertiary Care Centre by Posterior Decompression Alone

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Abstract

Original Research Article

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.

Keyword: Pott's spine, Cobb's angle, Decompression.

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INTRODUCTION

Tuberculosis is a common disease in developing countries affecting a large proportion of population. It is a major cause of mortality and morbidity in India. There is 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 [4]. 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 year. 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

Cervical Pott's were excluded.

Sample size

Twenty five patients

Methodology

Age, Sex, Location, presenting complaints were studied.

RESULT

At the end after evaluation of the results of decompression with a minimum follow-up of 6 months, inference made based on the data obtained from study.

In following points

- Operative duration.
- Neurological outcome
- Mobility
- Deformity
- Back pain
- Control of infection
- Complication

OBSERVATION

The present study comprises of 25 patients of thoracolumbar Pott's spine admitted in the department of Neurosurgery, G.R. Medical College & J.A. Group of Hospitals, Gwalior from Feb 2016 to Aug 2017 who were treated by decompression alone.

Table-1: Age wise distribution-

Age in Years	No. of patients	Percentage
<10	3	12%
10-20	1	4%
21-40	11	44%
41-60	8	32%
>60	2	8%

Mean age was 37.2 years

Table-2: Sex wise distribution

Sex	Number of patients	Percentage
Male	13	52%
Female	12	48%

Table-3: Distribution according to location of disease

Location of disease	Number of patients	Percentage
Upper Dorsal spine D1-4	2	8%
Mid Dorsal spine D4-8	6	24%
Lower Dorsal spine D8-12	13	52%
Lumbar spine L1-5	4	16%

Table-4: Assessment of effect of Decompression alone after 1 month-

Sign & Symtoms	Present	Improvement	Percentage
Pain relief	25	20	80%
improvement in power	22	15	68%
improvement in sensation	21	10	47.6%
improvement in Autonomic system	8	2	25%
Mobility	22	4	18%
improvement in Cobb's angle	25	6	24%

Table-5: Assessment of effect of Decompression alone after 3 month-

Sign & Symtoms	Present	Improvement	Percentage
Pain relief	25	23	92%
improvement in power	22	17	77%
improvement in sensation	21	13	62%
improvement in Autonomic system	8	2	25%
Mobility	22	15	68%
improvement in Cobb's angle	25	6	24%

Table-6: Assessment of effect of Decompression alone after 6 month-

Sign & Symtoms	Present	Improvement	Percentage
Pain relief	25	24	96%
improvement in power	22	17	77%
improvement in sensation	21	15	71.5%
improvement in Autonomic system	8	2	25%
Mobility	22	17	77%
improvement in Cobb's angle	25	7	28%

Table-7: Post-operative Complications

complications	Number of patients
Wound infection	2
Persistent pain	1
Paraplegia	3
Implant Failure	
Fusion failure	5
vascular injury	0
Perioperative bleeding	0
Revision of surgery	
Death	0

Table-8: Comparison of effectiveness between decompressions alone versus decompression with instrumentation procedure after 6 months-

Sign & Syntoms	Patients got relieved by Decompression alone %	Patients got relieved by Decompression with instrumentation %	P- Value
Pain relief	96	88	0.8314
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

DISCUSSION

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 25

cases of thoracolumbar Pott's spine were chosen for decompression alone procedure, choice of the operative procedure was decided according to feasibility, affordability and general medical condition of the patients.

Table-9: 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. Ehasei <i>et al.</i> [8]	5-80	42.5	48:52
3	Park <i>et al.</i> [9]	10-76	44	50:50
4	Kenyon <i>et al.</i> [10]	14-65	29	47:53
5	Su <i>et al.</i> [11]	10-88	44.5	50:50
6	Barriere <i>et al.</i> [12]	20-76	42	56:44
7	Alothman <i>et al.</i> [13]	15-80	53	53:47
8	Solagberu <i>et al.</i> [14]	2-70	27	48:52

Table-10: Location wise distribution

S.N.	Study	Thoracic (%)	Thoraco lumbar (%)	Lumbar (%)
1	Present study	68	16	16
2	M. Ehsaei <i>et al.</i> [8]	46	10	33
3	Park <i>et al.</i> [9]	78	11	20
4	Kenyon <i>et al.</i> [10]	65	-	41
5	Su <i>et al.</i> [11]	33	17	42
6	Barriere <i>et al.</i> [12]	48	0	21
7	Alothman <i>et al.</i> [13]	55	-	36
8	Solagberu <i>et al.</i> [14]	24	24	44

Results of the decompression alone was observed after one month of follow up there was improvement in back pain was more in decompression alone group patients as compared to decompression with instrumentation group, improvement in power and sensation and bowel bladder function was more or less similar in both the groups and no significant difference in either group while there was significant improvement in mobility and Cobb's angle improvement in decompression with instrumentation group as compared to decompression alone group patients.

After three months of follow up improvement in back pain, power, sensation, bowel bladder function and mobility was more or less similar in both the groups and no significant difference in either group while there was significant improvement of Cobb's angle in

decompression with instrumentation group as compared to decompression alone group patients.

After six month of follow up it was observed that improvement in back pain, power and mobility more or less similar in both the groups and no significant difference in either group while there was more improvement in sensation and bowel bladder function, in decompression with instrumentation group but improvement was not statistically significant. While significant improvement was found in Cobb's angle in decompression with instrumentation group as compared to decompression alone group patients.

Moreover the in decompression alone there was only decompression of cord was done and the pressure over the cord was removed but the spine became unstable so it hampers the mobility and

therefore increased deformity was found in the decompression alone group while in other group decompression with instrumentation spine was stable so there was improvement in Cobb's angle and minimal deformity of spine and improved mobility as spine was stabilised patients were mobilised early in compare to decompression alone group.

However there is another extreme of the spectrum in developing countries where many poor patients are left untreated due to lack of adequate infrastructure (number of beds/hospitals), human resource (medical and paramedical staff), literacy/awareness and capacity to afford cost of implants at public healthcare facility or cost of treatment at private healthcare facility. Medical practice in this era is expected to be ethical; evidence based and should adhere to various protocols established over the years for quality and safety. Therefore, if a paraplegic patient with tuberculosis of dorsal spine with kyphosis is to be treated, he has to be operated at a centre where at least radiographic localisation equipment, high speed drill, and surgeons are available. Tuberculosis is prevalent in developing countries and burden of spinal tuberculosis patients, who are extremely poor, is much more than what public sector hospitals in developing countries can handle/treat.

If a poor patient is admitted to a public sector hospital, cost of prosthetic implants is beyond his reach. Average cost of available implants required for a patient of dorsal spinal tuberculosis of 1-2 levels is approximately USD 1000, which is more than or equal to annual income of most of these patients. Unfortunately, the end result is to choose ATT alone (without surgery) or effective decompressive surgeries without fixation through minimum surgical trauma and prolonged bed rest for bony fusion to occur.

Furthermore in the present study we found that in decompression alone patients have good relief in backache, less time consuming procedure, easy with less intraoperative blood loss but as spine was unstable patient have to bed ridden for long time and there was increased deformity of spine as compared to the decompression with instrumentation group patients.

It is thus clear that the 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.

After comparison of the results of the decompression alone and decompression with instrumentation, it was observed that after one month of follow up there was improvement in back pain was more in decompression alone group patients as compared to decompression with instrumentation group, improvement in power and sensation and bowel

bladder function was more or less similar in both the groups and no significant difference in either group while there was significant improvement in mobility and Cobb's angle improvement in decompression with instrumentation group as compared to decompression alone group patients.

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If a poor patient is admitted to a public sector hospital, cost of prosthetic implants is beyond his reach. Average cost of available implants required for a patient of dorsal spinal tuberculosis of 1-2 levels is approximately USD 1000, which is more than or equal to annual income of most of these patients. Unfortunately, the end result is to choose ATT alone (without surgery) or effective decompressive surgeries without fixation through minimum surgical trauma and prolonged bed rest for bony fusion to occur.

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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 especially lower dorsal segment was most commonly involved.
- Backache was the most common presenting symptom (100%) and 90% came to the hospital with motor weakness.
- Decompression alone shows more improvement in back pain in early post-operative period.
- Mean operative duration was less in decompression alone procedure.
- Decompression procedure is easy, less time consuming with less learning curve with less intraoperative blood loss.
- Decompression with instrumentation shows significant improvement in early mobility of the patients as spine is more stable.

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