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PROSPECTIVE STUDY OF DIAGNOSTIC METHOD AND OUTCOME OF THORACIC AND THORACOLUMBAR DECOMPRESSION AND PEDICULAR FIXATION IN POTTS SPINE PATIENTS

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ABSTRACT Tuberculosis is a ancient infection that has plagued humans. spine tuberculosis is the most dangerous form of musculoskeletal TB , as it may cause destruction of the vertebral body, and produce spinal deformity and paraplegia .our aim is to assess the diagnostic method, clinical and neurological outcome in patients with Potts spine.21 patients included in this study who were operated during the time period this study and followed prospectively. In our study 14 of 21 (66%) recovered completely neurologically (no paraplegia at follow up) while incomplete recovery occurred in 4 patients (19%) and no recovery in 2 patients (9.5%) and death of one patients occurred due to meningoencephalitis.

Combined antitubercular drugs and global decompression with pedicular screw fixation give a excellent treatment out come .

KEYWORDS : Global decompression ,Pedicular screw fixation.

INTRODUCTION

Tuberculosis is a ancient infection that has plagued humans. Spine tuberculosis is the most dangerous form of muskuloskaletal TB , as it may cause destruction of the vertebral body, and produce spinal deformity and paraplegia. Approximately 1.7 million people a year worldwide and india alone account for one fifth of the total cases of TB worldwide[1,2].Spinal tuberculosis is the most common form of skalatal TB comprising 40% to 50% of all cases of skalatal TB[1]. Spine tuberculosis is the most dangerous form of muskuloskaletal TB , as it may cause destruction of the vertebral body, and produce spinal deformity and paraplegia .Dorsal spine is most commonly associated with neurological complications as it has narrow spinal canal and the physiological thoracic kyphosis forces the diseased tissue inside the spinal canal.

At present currently available anti tubercular drugs, modern diagnostic modalities such as MRI , CT scan ,PET scan has allow us to make diagnosis of spinal TB well before the appearance of deformity or paraplegia and to achieve healing of the lesion with minimal or no sequelae of spinal deformity or neurological complication. The advances in surgical management such as anaesthesia care intensive care facilities and use of instrumentation has improved the outcome in complicated cases of spinal TB. The importance of spinal TB are to prevent the development of kyphotic deformity , paraplegia . Management kyphotic deformity and paraplegia , the diagnosis and management of atypical presentation and the diagnosis and treatment of multidrug resistance[2].Introduction of newer and effective anti tubercular therapy has allowed bacterial control of the disease and healing of spinal TB with reduced sequelae of neurological deficit and kyphotic deformity[8].15% of patients treated conservatively for TB spine have a considerable increase in kyphotic deformity which is more then 60 degree 3% to 5%.[9]

Surgery is indicated in certain patients of spinal TB with or without neurological complications. Neurological recovery after surgical decompression occurs in variable percentage of cases,which may be partial or complete or no neurological recovery in some patients . The final neurological outcome after surgery needs to be reported on long term basis.

AIMS AND OBJECTIVE

1. To evaluate role of surgery in cases of pott's spine.
2. To assess the diagnostic method, clinical and neurological outcome in patients with pott's spine.

INCLUSION CRITERIA

All surgically treated cases of TB spine in department of orthopaedics , Government medical college Khandwa mp (2018 to 2020) in whom diagnosis was TB made on the basis of clinico-radiological findings were enrolled in this study.

EXCLUSION CRITERIA

1. Patients lost to follow up.
2. Patients in whom preoperative record were not available.
3. Patients who have died due to any cause .
4. Conservatively managed patients.

METHEDOLOGY

There are 21 patients in this study (2018 to 2020). Listing of patients who were operated from august 2018 to july 2019 (n = 8) was done from routine orthopaedics operation theatre register and ward register and available detail from hospital records were recorded. 13 patients were included in the study who were operated during the time period this study (august 2019 to august 2020) was being conducted and were followed up prospectively.

12 female and 9 male and 12 patients belong to 20 to 29 year age group and mean age group was 31.71±12 . 57 years .Dorsal spine was the involved segment in 10 of 21 (47.61%) patients followed by lumbar spine (n=9: 42.85%) and dorsolumbar spine (n=1:4.76%) One patients has skipped lesion involving both dorsal and lumbar spine. Cervical spine involvement is relatively rare (n=0) .

Neurological deficit was measured in terms of ASIA score (ASIA impairment scale) . 10 patients had pre operative ASIA impairment scale (AIS) grade B, 11 patients had grade D .

Following investigation were done –

- Blood for Hb%, TLC, DLC, ESR, Blood Urea, Blood sugar, Total protein, Serum Electrolytes, Blood grouping & Cross matching, liver function test.
- X-rays: AP % Lateral view of the affected area of spine , chest X-rays PA view.
- Diagnosis was assessed clinically and radiologically and MRI finding in some patients where diagnosis was doubtful.
- ATT was started after diagnosis was ascertained. Minimum duration of ATT was 9-12 months.

Sample taken intraoperatively was sent for histopathological examination & culture and sensitivity.

Average duration of in-patients care was about 1 month.
Patients were mobilize with the help of spinal brace.
The patients were advised to attend orthopaedic OPD once month.
Minimum duration of follow up was three months.

FOLLOW UP

1.Clinical and Neurological recovery –

- Neurological recovery after surgical intervention was measured in terms of ASIA scoring (ASIA IMPAIREMENT SCALE).
- Pain was measured by VAS Score.

2.Radiological outcome measured by Cobbs angle.

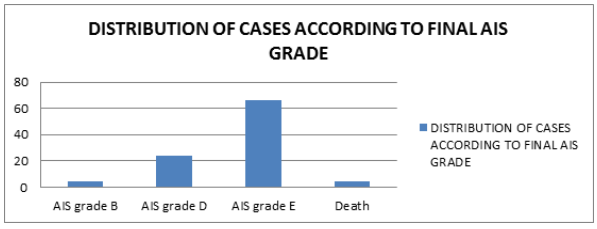
RESULT

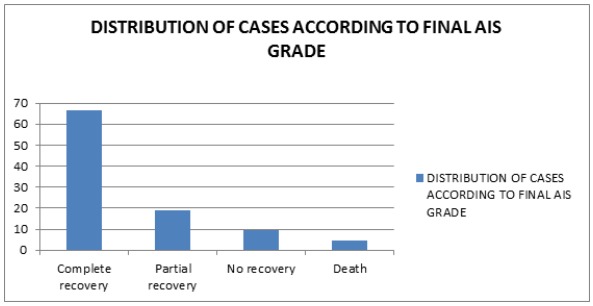
Of 10 patients with AIS grade B, 5 (50%) patients had complete

recovery to grade E, 4 (40%) patients had partial recovery to grade D and 1 (10%) patients had no recovery .

Of 11 patients with AIS grade D , 9 (81.82%) had complete to grade E ,1 (9.09%) patients with skipped lesion had no recovery, and death of 1 (9.09%) patients occurred due to tubercular meningoencephalitis 2 and half month after surgery.

In our study 14 of 21 (66%) recovered completely neurologically (no paraplegia at final follow up) while incomplete recovery occurred in 4 patients (19.04%) patients and no recovery occurred in 2 patients 9 9.5%). Death of 1 patients occurred due to tubercular meningoencephalitis . Neurological recovery assessed by wilcoxon sign rank test was found to be statistically significant (Z = -3.792, <0.0001).





FATE OF KYPHOTIC DEFORMITY

K angle	Pre operative	Post operative	Loss of K angle at final follow up	K angle at final follow up
Mean	24.15	12.05	4.70	16.75
±SD	±7.336	±6.8	±1.9	±6.33

	Mean pre operative K angle	Mean K angle Final follow up	Significance
K angle	24.15	16.75	t = 9.037
	±7.33	±6.33	P < 0.0001

	Pre operative score	Final follow up	Significance
VAS PAINSCORE	71.60 ±14.07	13.75 ±19.39	t = 12.684 P < 0.0001

DISCUSSION

Spinal TB is medical disease[7,14] and surgical intervention is reserved for selected cases[7].We get variety of cases of spinal TB both uncomplicated and complicated ones in our ward. These patients are treated by starting ATT and bed rest initially and surgical intervention is kept reserved for some cases where need of surgery is justified with a suitable indication.

We analyze 21 patients of spinal TB who were treated by surgical intervention from august 2018 to july 2020 . 20 patients spine TB were treated with global decompression posterior instrumentation posterolateral fusion and fat pad grafting, by posterior midline approach.

In 1 patients of dorsal spine TB , leminectomy and posterior decompression was done without instrumentation .

In our study posterior instrumentation was in form of pedicular screw fixation .

Average operating time was approx 3.75 hours.
Average intraoperative blood loss was approx 650ml.
We established recovery of clinical and neurological status , and change in kyphosis angle (modified konstam angle).

Complications

- 3 patients had infection of suture line with no infection at deeper level which resolved by debridement and antibiotics as per culture sensitivity.
- 2 patients had bed sore of grade 1 postoperatively which healed uneventfully.
- 7 patients developed mild pain at donor site of fat pad and bone graft with no pain at involved vertebral level.

CONCLUSION

- Combined with antitubercular drugs, 'global decompression posterior instrumentation posterolateral fusion and fat pad grafting' by posterior midline approach is effective and safe method in treatment of thoracic and lumbar spine TB and leads to positive treatment outcome.
- There is female preponderance in patients of spinal TB treated by surgical interventation.
- Majority of patients operated for potts spine belong to 22 – 29 years age group.
- Complete neurological recovery was achieved in 66% of the operated cases with final follow up.
- Pedicle screw is the implant of choice for lumbar spine TB.
- Duration of symptoms adversely affects the outcome of surgery.
- If possible fat pad graft should be taken from same posterior midline incision.

CASES

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