



Comparison of Surgical and Conservative Treatment for Spinal Tuberculosis

Authors

Dr Richa Sharma^{1*}, Dr M.A Basit²

¹Asst Prof Pediatrics, Deptt of paediatrics SLBS GMC Nerchowk Mandi

²Consultant, Mannat Hospital

*Corresponding Author

Dr Richa Sharma

Abstract

Treatment of spine has evolved much since Percivall Pott's first description of vertebral tuberculosis. However, there are still a lot of controversies regarding the best approach for prevention of deformities. The objective of this study was to evaluate the clinical and X-ray characteristics of patients with vertebral tuberculosis and to compare the conservative treatment alone to the surgical one associated with antitubercular therapy, particularly regarding residual deformity and neurological deficit. 152 patients were evaluated: 52 were surgically treated. Among 152 patients, 100 (65%) cases were treated conservatively with antitubercular therapy only. Remaining 52 (35%) cases were treated by surgical intervention in combination with chemotherapy. In this study among 100 patients treated conservatively, 80(80%) showed significant improvement of neurological status and constitutional symptoms. Other 20 (20%) showed no improvement or deterioration of neurological status. In this series among 52 patients treated by surgical intervention, 50 (96%) showed significant improvement of neurological symptoms, But 2 (4%) patient failed to improve neurological status even after surgical treatment.

Keywords: Tuberculosis; Spine; Kyphosis.

Introduction

The first documented case of spinal tuberculosis (TB) dates back to 5,000-year-old Egyptian mummies. However, the first modern case of spinal TB was described in 1779 by Percival Pott^[1]. Spinal involvement occurs in less than 1% of patients^[2,3]. The increasing frequency of TB has made spinal TB a major health problem^[2,4]. Spinal TB (Pott's disease) is the commonest as well as most lethal form of skeletal TB and accounts for 50% of all the cases. Although the thoracolumbar junction is the most common site but, any part of the spine can be involved^[5]. The incidence of neurologic

complications in spinal TB varies from 10% to 43%. If left undiagnosed and not treated early may lead to major sequelae such as paraplegia and deformities. The incidence of neurological involvement in patients with spinal tuberculosis is 46%^(3,10). There are 2 kinds of neurological deficits: early and late. The early deficit occurs during the active phase of the disease; the late deficit, as sequel. The late deficit occurs by direct mechanical pressure (abscess, granulation tissue, debris and caseous tissue), instability, infectious thrombosis and spinal vessels arteritis. The latter, due to spinal kyphosis, where an anterior

transverse bone bridge compresses spinal cord⁽¹¹⁾. Surgery for those patients with neurological deficit at the acute phase of the disease is limited to cases of conservative treatment failure, fast onset, recurrent paraplegia, uncontrolled spasticity, painful paraplegia, and instability confirmed by image. In the late phase, surgery is recommended in cases of severe kyphosis on thoracolumbar spine. Tuberculosis of the spine can be treated by both conservative and surgical approach¹. It is apparent that every patient with neural complications will not be cured by antitubercular drugs and rest alone, however, all patients do not need surgical decompression as well. An absolutely conservative approach to Pott's paraplegia is considered unjustifiable as one might be losing very valuable time⁽²⁾. Irreparable damage of the cord may take place if the deterioration progresses to complete loss of motor and sensory functions. Opinion also varies regarding the role of surgery in tuberculous paraplegia⁽³⁾. A large group of surgeons performed debridement and decompression in all cases of tuberculosis of the spine irrespective of the status of neurological involvement⁽⁴⁾. Others perform operative decompression only in those cases who did not respond to anti-tubercular drugs and rest⁽⁵⁾. It is difficult to strictly compare the results of various series treated by conservative and operative treatment as the clinical material varies. Routine employment of newer and more effective anti-tubercular drugs has also improved the outcome of non-operative and operative treatment⁽⁶⁾. Therefore this present study was undertaken to compare Surgical and Conservative Treatment for Spinal Tuberculosis.

Material and Methods

This study was designed as pragmatic randomized control trial which was carried out in the Department of Orthopedics at Mannat Hospital during the period of January 2016 to January 2019 for a period of three (03) years. All patients who were admitted with the diagnosis of spinal tuberculosis were included in the study. Clinically

suspected patients of TB spine and supported by investigation findings were selected as study population. Patients were selected randomly for conservative and surgical treatment. Patients with history of spinal injury were excluded. Among 152 patients, 100 (65%) cases were treated conservatively with antitubercular therapy only. Remaining 52 (35%) cases were treated by surgical intervention in combination with chemotherapy. In this study among 100 patients treated conservatively, 80(80%) showed significant improvement of neurological status and constitutional symptoms. Other 20 (20%) showed no improvement or deterioration of neurological status. In this series among 52 patients treated by surgical intervention, 50 (96%) showed significant improvement of neurological symptoms, But 2 (4%) patient failed to improve neurological status even after surgical treatment. The data was collected by the researcher himself. The aims and objectives of the study along with its procedure, alternative diagnostic methods, risks and benefits of this study were explained to the patients in easily understandable language and then informed consent was taken from each patient. It was assured that all information and records would be kept confidential and the procedure would be helpful for both attending surgeon and patient in making decision for management. Statistical analysis was done by one tailed x2 test (Fisher's exact test) using SPSS 16.0 to see the outcome of surgical and conservative treatment of the tuberculosis of the spine. The p value was 0.031 which was less than 0.05 at 5% level of significance.

Results

Table:-1 Distribution of Patients by age

Age group(years)	Frequency	Percentage
0-10	2	1.3%
11-20	14	9%
21-30	62	40.7%
31-40	22	14.47%
41-50	30	19.7%
51-60	20	13%
61-70	2	1.33%
TOTAL	152	100%

Table:-2 Comparison of conservative & surgical treatment

Treatment	Improved	Not Improved	Total	P value
Conservative	80(80%)	20(20%)	100	0.031
Surgical	50(96%)	2(4%)	52	
Total	130(85%)	22(15%)	152(100%)	

Results

In this study 152 cases of tuberculosis of the spine show the age range from 6 years to 67 years. With the highest incidence in the second to third decade of life (55.7%). The peak incidence was in the second decade (40.7%). The mean age was 26.4 years with SD \pm 18.65years. (Table 1)

Among 152 patients, 100 (65%) of cases were treated conservatively with antitubercular chemotherapy. Remaining 52 (35%) cases were treated by surgical intervention in along with chemotherapy. In this study among 100 patients treated conservatively, 80(80%) showed significant improvement of neurological status and constitutional symptoms. Other 20 (20%) showed no improvement or deterioration of neurological status.

In this series 52 patients were treated with surgical intervention, 50 (96%) showed significant improvement of neurological symptoms, But 2 (4%) patient failed to improve neurological status even after the surgical intervention also (Table 2)

Discussion

The world has a population of about 7.7 billion. Of which One fourth is suffering from tuberculosis. With about 2.79 million cases of tuberculosis alone in India⁽³⁾. Of all the total patients with tuberculosis 1 to 3.0% have involvement of the skeletal system .Spinal tuberculosis being the commonest form of skeletal tuberculosis. Spinal tuberculosis can occur at any age but it is most common during first three decades of life. In this study mean age was 26.4 years and ranged from 6 years to 67 years. The highest incidence was in first three decades (55%) of life.⁽⁸⁾ series also shows highest incidence in first three decades of life and it is 73%.Currently there is a tendency of involvement of adult age

group particularly in the developed countries due to high incidence of AIDS, intravenous drug abuse and other causes of immune suppression⁽⁹⁾. Patients were selected on the basis of indication and clinical features for conservative and surgical treatment. Conservative treatment includes complete rest in bed, improvement of general health and antitubercular chemotherapy by 4 drugs. The patients were periodically assessed clinically, radiologically and haematologically. The antitubercular drugs were continued for a period of 18 months. Most of the patient improved; however, for 52cases surgical intervention was required later. The basic principle of surgical intervention was decompression by draining of pus or radical debridement. The results of surgical treatment were satisfactory with neurological recovery (96%). The neurological recovery from spinal tuberculosis was 80% after conservative treatment. Those cases which failed to improve neurologically after conservative treatment within 3 months required surgical intervention. The higher incidence of neurological recovery from surgical intervention was due to careful selection of the cases, appropriate timing of surgery. Similar to the present study⁽¹⁰⁾ has performed a study on spinal tuberculosis with antitubercular drugs with surgery only for failure of paraplegia and has shown 89% neurological recovery. In another study⁽¹¹⁾ has performed a radical surgery with antitubercular drugs among the spinal tuberculosis patients and has found 84.4% cases of neurological improvement which is consistent with the present study result .There were certain limitation observed in the study. All cases would not be uniformly investigated for cord changes because of constraint of availability and affordability. All samples were not available for routine follow up because of various reasons like lack of awareness and socio-economic problems. Long term outcome could not be assessed.

Conclusion

This study showed that patients presenting with spinal tuberculosis improved by operative

procedure better than compared to antitubercular chemotherapy alone. Therefore, it can be concluded that surgical treatment is significantly more effective than conservative treatment for tuberculosis of the spine.

References

1. Nussbaum ES, Rockswold GL, Bergman TA, Erickson DL, Seljeckong EI. Spinal tuberculosis: a diagnosis and management challenge. *J Neurosurg* 1995;83:243-7.
2. Rajasekaran S, Shanmugasundaram TK, Prabhakar R, Dheenadhayalan J, Shetty AP, Shetty Dk., Tuberculosis Lesions of the Lumbosacral region. A 15 year follow up of patients treated with ambulant chemotherapy. *Spine* 1998;23:1163-7
3. Ousehal A, Gharbi A, Zamiaty W, Saidi A, Kadiri R. Imaging findings in 122 cases of pott's disease. *Neurochirurgic* 2002;48(5):409-18
4. Parthasarathy R, Sriram K, Santha T, Prabhakar R, Somasundaram PR, Sivasubramanian S. Short course Chemotherapy for tuberculosis of the spine. A comparison between ambulant treatment and radical surgery -ten years report. *J Bone Joint Surg Br* 1999;81(3):464 -71
5. Mukhtar AM, Farghaly MM, Ahmed SH. Surgical treatment of thoracic and tuberculosis by anterior inter body fusion and posterior instrumentation. *Med Princ Pract* 2003;12(2):92-6
6. Lolge S, Maheshwari M, Shah J, Patkar D, Chawla A. Isolated solitary vertebral body tuberculosis- study of seven cases. *Clin Radio* 2003;58(7):545-50
7. Ramarnurthi B, Tandon PN. Textbook of Neurosurgery. (2' Edition) B.I. Delhi Churchill livingstone Pvt. Ltd. Delhi, 2001;1:497-509
8. Tuli SM., Treatment of neurological complications in tuberculosis of the spine. *J. Bone Joint Surg.* 1969;51A:680-92
9. Alici, E., Akcali, O., Tatari, H., Gunal, I., Effect of pre- operative chemotherapy on the outcome of surgical treatment of vertebral tuberculosis : retrospective analysis of 434 cases, *Arch Orthop Trauma Surg* 2001;121(12): 65-6
10. Konstam PG. Spinal tuberculosis in Nigeria. *Ann R Coil Surg Engl* 196;32:99-114
11. Kohli SB. Radical surgical approach to spinal tuberculosis. *J Bone Joint Surg* 1967;49B 668-73
12. Arct MW. Operative treatment of T.B. of the spine in old.