

Role of Chemotherapy in Tuberculosis of Spine

ZAKIR ALI SHAH, UZMA ARIF, MUHAMMAD NASEER BABAR KHAN, ASIM BILAL

ABSTRACT

Objective: To assess the effectiveness of chemotherapy in tuberculosis of spine.

Place and duration of study: From January 2012 to June 2012, at Nawaz Sharif Social Security Teaching Hospital, Lahore (Orthopedic department).

Subjects and methods: 50 patients fulfilling the selection criteria were identified. History and clinical examination performed for sinus, abscess, effectiveness of chemotherapy and biplane x-rays of affected area of fifty patients were taken. Patients followed-up and outcome was ascertain favorable according to British Medical Research Council if there were no symptom of pain, no sinus or abscess on clinical examination and radiological healing of spinal lesion at the end of 12 weeks.

Results: Out of 50 patients, 19 were males and 31 were females between 18-60 years. According to site of lesion thoracic spine was commonly involved (24 patients), lumbar spine in 16 patients followed by thoracolumbar junction in 10 patients. At end of follow-up, 30 patients achieved favorable status and 20 patients had unfavorable status.

Conclusion: It is concluded that spinal tuberculosis can be effectively treated with chemotherapy.

Keywords: Caries spine, radiological healing of spinal lesion, anti-tuberculous therapy.

INTRODUCTION

Tuberculosis (TB) is caused by Mycobacterium tuberculosis, and is one of the oldest diseases in the world¹. Extra-pulmonary TB accounts for about 15–20% of TB cases². Vertebral tuberculosis is the most common form of skeletal tuberculosis, constituting approximately 50% of all cases³. Spinal tuberculosis was discovered by Pott in 1776 and is the result of haematogenous dissemination from a primary focus. The most common site is the thoracolumbar junction, but any segment of the spine can be involved. Before the advent of chemotherapy in 1994, treatment was basically bed rest, but after the treatment with chemotherapy and surgery the outcome began to improve¹. With the advent of the chemotherapy, there has been a general inclination towards conservative form of therapy. Specific and effective conservative treatment is now the mainstay of treatment^{4,5}. Surgical treatment is considered in cases of spinal instability or progressive neurological symptoms⁶. Medical and Research Council and Working Party (MRC&WP) recommended chemotherapy as a standard first line treatment⁷. Currently course of chemotherapy is recommended. The rationale of my study was to look upon the results of non-operative ambulatory treatment of tuberculosis of spine⁸.

Department of Orthopaedics, Social Security Teaching Hospital/University College Medicine & Dentistry, Lahore
Correspondence to Dr. Zakir Ali Shah, Senior Registrar
Email: drzakiralishah@gmail.com, 0333-6566265

MATERIAL AND METHODS

This study was carried out at Orthopaedic Department, Nawaz Sharif Social Security Teaching Hospital, Lahore from January 2012 to June 2012. All male and female patients of 18 years or more, Tuberculosis of spine involving thoracolumbar region were included in the study. While patients having pregnancy, diabetes mellitus, motor deficits on examination, Kyphosis >40 degree on radiograph and Involvement of three or more thoracolumbar vertebrae were excluded.

Patients presenting in OPD of our Hospital for treatment of back pain were my study cases. Fifty patients fulfilling the selection criteria were identified and an informed consent was taken about their inclusion in the study. The demographic profile (i.e. age, sex) were noted. Clinical examination was performed for sinus or abscess and biplane x-rays of affected area were taken. Anti tuberculous chemotherapy was started with initial phase of four drugs. Patients were kept in follow up in OPD and pain was rated using Numerical rating score (NRS). Results of the study were evaluated at the end of 12th week from start of chemotherapy. Effectiveness was ascertained favorable if there was no symptom of pain, no sinus or abscess on clinical examination and radiological healing of spinal lesion at the end of 12 weeks. All this information was collected through specially designed proforma. All the collected information was entered into SPSS version 15.0 and Qualitative & Quantitative variables were calculated. Data was stratified for age to address effect modifier.

RESULTS

There were 19 males (38%) and 31 females (62%). Male to female ratio was 1:1.6 (Table 1).

Table 1: Frequency distribution of patients according sex (n=50)

Sex	Frequency	%age
Male	19	38
Female	31	62

Male to female ratio 1:1.6

The patients were divided into following age groups (Table 2). The Mean±SD between the ages was 34.62±13.95 years.

Table 2: Frequency distribution of patients according to age (n=50)

Age (years)	Frequency	%age
18 – 32	26	52
33 – 46	13	26
47 – 60	11	22

SD Standard deviation Mean±SD 34.62±13.95

According to the site of lesion involvement of thoracic spine was mostly involved 24 patients (48%), thoracolumbar junction in 10 patients (20%) and lumbar spine in 16(32%) (Table 3).

Table 3: Frequency distribution according to site of lesion

Site of lesion	Frequency	%age
Thoracic	24	48.0
Thoracolumbar junction	10	20.0
Lumbar	16	32.0

All the patients were having pain prior to starting treatment. At the end of study 37(74%) patients were pain free and pain did not improved in 13(26%) patients. Twelve of 50 patients were having sinus or abscesses at the start of treatment. At the end of study 5 patients (41.67%) remained with sinus or abscesses clinically. All the patients were having radiological active disease prior to starting treatment. At the end of study 30 patients had radiological healing of spinal lesion. In 20 patients (40%) there is no radiological healing (Table 4,5).

Table 4: Pre-treatment frequencies of variable

	Frequency	%age
Pain (using NRS)	50	100
Sinus or abscess	12	24
Radiological healing	-	-

Table 5: Follow-up after 12 weeks

	Frequency	%age
Pain (using NRS)	13	26
Sinus or abscess	5	41.67
Radiological healing	30	60

At the end of 12 weeks after start of ambulatory chemotherapy, favorable status achieved in 30 patients (60%) and 20 patients (40%) remained with unfavorable status (Table 6).

Table 6: Frequency distribution according to final outcome (n=50)

Outcome	Frequency	%age
Favourable	30	60
Unfavourable	20	40

DISCUSSION

Spinal tuberculosis is uncommon in the western world. Most of the patients with spinal tuberculosis in developed countries are immigrants from countries where tuberculosis is endemic⁹. Tuberculosis remains a major public-health problem in most of the world especially in developing countries. With the advent of the chemotherapy, there has been a general inclination towards conservative form of therapy¹⁰.

In a study done by Nene and Bhojraj¹¹ the average age of the patients was 37 years. In another study done by Parthasarathy et al¹², the mean age of the patients was younger age group. In a study by Park et al⁸ the average age of the patients was 44.07±16.57 years. In our study the average age of the patients at the time of the chemotherapy was 34.62±13.95 years with range 18 to 60 years (Table 2). Patients presented at younger age in present study which is comparable with the study conducted by Nene and Bhojraj⁷ in India (same subcontinent). In under developed countries it affects the people of the younger age group. In the developed countries it involves people at the extreme of age mostly old people. Out of 50 patients 31 (62%) were female and 19 (38%) were male. The male to female ratio was 1: 1.63 (Table 1). In a study done by Nene and Bhojraj⁷ and reported 71% female and 29% male. In another study by Parthasarathy et al¹² reported 47.40% were females and 52.60% males. In a study done by Dharmalingam¹³ reported 27% women and 73% men. In a study by Kursat et al¹⁴ reported 29% were females and 71% males. In a study by Park et al⁸ reported 69 patients were males (50.40%) and 68 were females (49.60%). In our study, there is female predominance as they constitute 52% population of our society where male gender is given preference over females in all aspect of life. For that reason, they could not fulfill their nutritional demands and remained prone to diseases like tuberculosis. In a study by Nene and Bhojraj⁷ who only included cases of thoracic spine. In the study thoracic involvement was (85%) and thoracolumbar junction in (15.7%). In a study by Parthasarathy et al¹² reported that thoracic

involvement was (37%) and lumbar involvement (42%) and followed by thoracolumbar junction in (14%). In a study by Park et al⁸ reported thoracic involvement was (33.1%) and lumbar involvement (44%) and followed by thoracolumbar junction in (9.7%). In our study, the most common vertebral area involved was the thoracic (48.0%) then Lumbar (32%) and thoracolumbar junction (20%) (Table 3). Preponderance in dorsal spine is due to close anatomical relationship with lungs, which is the most common site for tuberculous seeding.¹⁵ In study by Nene and Bhojraj⁷ reported the abscesses resolved with medical treatment in follow up of 40 months. In 12th report of the MRCW party on tuberculosis of the spine the rate of resolution was similar in all the series 83% lesions resolved by 12 months.¹⁶ Study conducted by Parthasarathy¹², 80% abscesses resolved in 12 months. In our study 12 patients with sinus and abscesses on admission, 7 patients (58.3%) resolved in 12 weeks. Results of present study were inferior to other studies which were of long duration and follow-up as abscesses or sinuses required longer duration to resolve. In study by Nene and Bhojraj⁷ reported the radiological healing in 74% of cases in 12 months. In another study done by Parthasarathy¹² reported the radiological healing in 80% by six years. In my study radiological healing of spinal lesion was observed in 60% patients in 12 weeks. Radiological healing was inferior in present study as study was of short duration. Results may be improved with longer study duration and follow-up. In a study by Nene and Bhojraj⁷ reported results of 74% favorable status achieved with nonsurgical ambulatory treatment in 12 months. In a study by Parthasarathy¹² who reported favorable status in 94% patients in 10 years. In present study, 60% patients achieved favorable status in 12 weeks. Our results were inferior to the other studies, because it's short duration. Results can be improved with longer study duration and follow-up.

CONCLUSION

Chemotherapy is very effective in the treatment of spinal TB, involving vertebral bodies without paraplegia.

REFERENCES

1. Tuli SM. Tuberculosis of the spine: a historical review. *Clin Orthop Relat Res* 2007; 460:29–38.
2. Polley P, Dunn R. Noncontiguous spinal tuberculosis: incidence and management. *Eur Spine J* 2009; 18:1096–1101.

3. Tuli SM. General principles of osteoarticular tuberculosis. *Clin Orthop Relat Res* 2002; 11–19.
4. Kotil K, Alan MS, Bilge T. Medical management of Pott disease in the thoracic and lumbar spine: a prospective clinical study. *J Neurosurg Spine* 2007; 6:222–28
5. MRC&WP on TB spine: A 05 year assessment of controlled trials of short course chemotherapy regime for 09 months duration for spinal tuberculosis in patients with ambulatory from standard radical surgery. *Indian J Orthop* 1999; 23:73-81.
6. Jain AK. Tuberculosis of the spine. *Clin Orthop Relat Res* 2007; 460:2–3.
7. MRC&WP on TB spine: A 15 year assessment of controlled trials comparing 9 months ambulant chemotherapy with radical and debridement series for spinal TB. *J Bone Joint Surg Br* 1998; 80: 456-62.
8. Park DW, Sohn JW, Kim EH, Cho DI, Lee JH, Kim KT, et al. Outcome and management of spinal tuberculosis: a retrospective study of 137 adult patients at Korean teaching hospitals. *Spine*. 2007; 32: E130-5.
9. Garg RK, Somvanshi DS. Spinal tuberculosis: A review. *J Spinal Cord Med*. 2011; 34: 440–54.
10. Willen J, Lindahls, Nordwall A. Unstable thoracolumbar fractures: a comparative clinical study of conservative treatment and Harrington instrumentation. *Spine* 1985; 10: 111-22.
11. Nene A, Bhojraj S. Results of nonsurgical treatment of thoracic spinal tuberculosis in adults. *Spine J* 2005; 5: 79-84.
12. Parthasarathy R, Sriram K, Santha T, Prabhakar R. Short course chemotherapy for tuberculosis of the spine, a comparative report between medical treatment and radical surgery, 10 year report. *J Bone Joint Surg Br* 1999; 81: 464-71.
13. Dharmaligam M. Tuberculosis of the spine – the Sabab experience: epidemiology, treatment and results. *Tuberculosis* 2004; 84: 24-8.
14. Kursat OM, Reha B, Meltem T, Ilknur D, Dilay D, Sibel A, et al. Extrapulmonary tuberculosis in non-human immunodeficiency virus-infected adults in an endemic region. *Ann Thorac Med* 2007; 2: 118-21.
15. Qazi SA, Khan S, Khan MA. Epidemiology of childhood tuberculosis in a hospital setting. *JPMA* 1998; 48: 164-7.
16. MRC&WP on Tuberculosis of the spine. Controlled trial of short-course regimens of chemotherapy in the ambulatory treatment of spinal tuberculosis. *J Bone Joint Surg Br* 1993; 75: 240-8.