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CLINICAL PRESENTATION AND DIFFERENT INDICATIONS OF SURGERY FOR SPINAL TUBERCULOSIS

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ABSTRACT:

Background: Spinal tuberculosis is common in developing countries. It is always secondary to a primary lesion elsewhere in the body. Localized spinal pain is the most common presentation of this disease. It usually involves the anterior elements; hence surgery through anterior approach is the approach of choice.
Material and Methods: This prospective observational study was conducted in the Department of Neurosurgery at Liaquat University Hospital Hyderabad/ Jamshoro from January 2010 to August 2011. A sample of forty patients was selected after obtaining informed consent for this study. Patients were admitted throughout patients department, Liaquat university hospital Hyderabad/ Jamshoro, casualty and referred from other department. All patients were investigated with magnetic resonance imaging (MRI) along with routine investigations.The data was collected on a predesigned proforma and SPSS 17 was used for data analysis.
Results: Thirty two (32) patients improved neurologically and four (4) patients worsened while four (4) patients remained same.
Conclusion: Patients having neurological deficits with large Para vertebral abscess and spinal deformity should undergo surgical intervention without any delay.

Keywords: Para vertebral abscess, spinal deformity, spinal tuberculosis, spinal surgery

INTRODUCTION:

Since a long time Tuberculosis (TB) has been around, but for the past decade its prevalence has increased markedly. Tuberculosis is still associated with significant morbidity and mortality, especially in developing country[1]. Tuberculosis is one of the earliest diseases known to mankind. In 19th and 20th centuries, tuberculosis was a common disease. Despite the advent of cheap and effective drug therapy, the disease continues to be a major worldwide problem[2].

In developing countries it is 20-50 times more common and remains a problem partly because of inadequately supervised treatment and cost[3]. Among medically and economically deprived persons throughout the world, tuberculosis remains a leading cause of death[4]. Every year 8 million new pulmonary tuberculosis cases are added and three millions tuberculosis patients die. In Pakistan, each year between 110,000 and 130,000 patients are added to the existing number of tuberculosis individuals[5].

Lungs are the main target of tuberculosis. Pulmonary tuberculosis accounts for 75-90% of total cases of this disease. Extra pulmonary forms of tuberculosis constitute 10-25% cases of this disease[6].

Osteoarticular tuberculosis in the form of spinal tuberculosis is a common extra pulmonary disease after genitourinary and milliary tuberculosis and accounts for about 50-75%

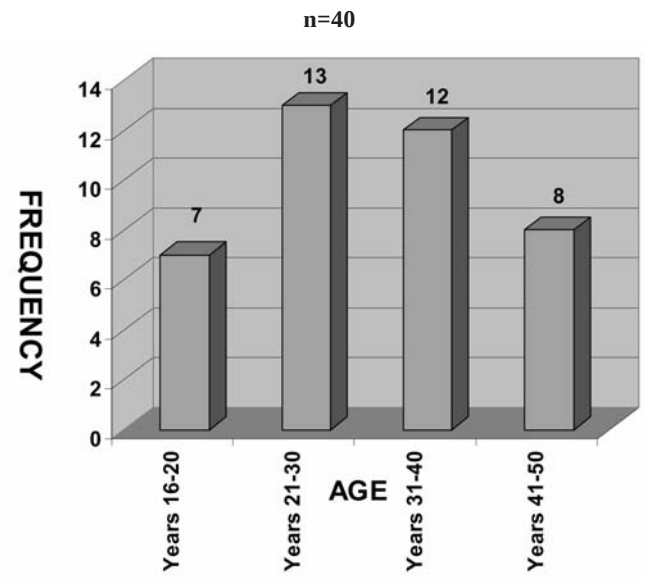
of such cases[7, 8]. Tuberculosis is a common disease in Pakistan, more prevalent in urban low socioeconomic conditions, chiefly due to malnutrition, overcrowding and unhygienic conditions[9]. Tuberculous osteomyelitis is no longer a significant clinical problem except in developing countries where the incidence of tuberculosis is high[10]. It is the major cause of spinal cord compression and disability, causing more and more people to become a burden to their family and the society. In pott's disease, the spinal cords may become involved in a compression by bony elements and / or expanding abscess or by direct involvement of cord and leptomeninges by granulation tissue. Neurological deficit are more symmetrical and of more gradual onset than those resulting from other pathologies[11].

One third of the world population is infected with tuberculous bacillus. Since 1985 there has been a renewed epidemic of tuberculosis that was previously thought to be in the neck. There is evidence to believe the main factor for this resurgence has been the human immunodeficiency virus (HIV). In Pakistan the prevalence of tuberculosis, according to World Health Organization estimate, is around 200/ 100000population. A recent study from a Pakistani rural area had shown that these World Health Organization figures may be an underestimate. In the village studies the prevalence of smear positive and smear negative cases where found to be 544 and 1949/100000 respectively[12].

Drug resistant tuberculosis is entirely a man wade problem results from inadequate chemotherapy. In community, chronic cases resulting from poor treatment that are the reservoir of deadly drug resistant strains of tuberculosis. The only way to prevent tuberculosis entirely is to effectively treat the active cases so as to stop the transmission of this infection in the community[13].

This study will be useful for neuro and orthopedic surgeons who are involved in the management of tuberculosis in general and of spinal tuberculosis in particular. The purpose of this study is to evaluate the criteria for surgery where patients do not get benefit from chemotherapy alone.

FIGURE 1
Age Distribution



The purpose of this study was to evaluate different clinical presentations in dorsal spine and different indications used for surgery.

MATERIAL AND METHODS

This study was carried out in the Department of Neurosurgery Liaquat University Hospital during the period from January 2010 to August 2011. The study was designed as prospective observational study. A total of 40 patients were included with non-probability purpose sampling technique in this study after obtaining informed consent. The patients were admitted throughoutdoor patients department, Liaquat university hospital Hyderabad/ Jamshoro, casualty and referred from other departments. All patients were investigated with magnetic resonance imaging (MRI) along with routine investigations.

Inclusion criteria:

- Patients of either sex, between 16 and 50 years of age.
- Significant osseous involvement i.e.; destruction of two or more vertebral bodies with or without involvement of intervertebral disc on X-ray + CT Scan + CT myelogram or M.R.I.
- Progressive Neurological deficit.
- Patient with only involvement of Dorsal Spine.

Exclusion criteria:

- Patients having diabetes mellitus or other co morbidities.
- Medically unfit patient.
- Patient not willing to undergo surgery.

Data collection procedure:All patients after admission underwent a complete clinical assessment including detailed history and examination with particular emphasis on neurological examination.A predesigned proforma was used to collect the study variables.
Data analysis tool: SPSS 17 was used for statistical analysis.

RESULT

From January 2010 to August 2011Forty (40) patients were selected from outpatient department (OPD), COD, different wards and referral from other hospitals of Sindh province. Age distribution is showed in Figure 1.

All patients underwent for routine as well as specific investigations. Anti-tuberculosis chemotherapy in the form of four separate drugs started in all patients.All our patients had predominantly localized pain, motor and sensory deficit preoperatively.

The age of these patients ranged from 16 years to maximum 50 years. Most of our patients were in the third and fourth decade. Figure 1.There were no gender preponderance 21 were males and 19 were females in our study mid dorsal spine region was commonly involved, Table 1.Usually the local pain was the first symptom to appear followed by motor and sensory deficits Table 2. Sphincters were usually involved in the end. Regions of the Dorsal Spine Involved are given in Table 3.

For surgical intervention we used different approaches according to the region of dorsal spine involved. In upper dorsal spine one (1) patient underwent abscess drainage and debridement through anterior cervical approach and in two (2) patients costotransversectomy performed, abscess drainage and debridement.

In middle dorsal region through thoracotomy, sixteen (16) patients underwent decompression, grafting and instrumentations (web-Morley), while five (5) patients have de-compression and grafting only. In lower dorsal region (dorso lumbar junction) extrapleural and retropleural approach was carried out. In all eight (08) pa-

TABLE 1
FREQUENCY OF CLINICAL FEATURES

FEATURES	PATIENTS	PERCENTAGE
LOCAL SPINAL PAIN	40	100 %
NEUROLOGICAL DEFICIT	40	100 %
GIBBUS	17	42.5 %
FEVER	07	17.5 %

TABLE 2
Pre-operative Sensory Deficit

Sensory Modality	Excellent	Good	Fair	Poor
Pin prick	0	3	9	28
Joint Position	0	7	12	21
Vibration	0	5	13	22

Excellent = 75 - 100 % of normal
Good = 50 – 75% of normal
Fair = 25 – 50% of normal
Poor = Less than 25% of normal

TABLE - 3
REGIONS OF THE DORSAL SPINE INVOLVED N=40

Region	No. Patient	%
Upper Dorsal Spine T_1- T_4	5	12.5
Middle Dorsal Spine T_5- T_{10}	27	67.5
Lower Dorsal Spine including Dorsolumbar Junction T_{11}-L_1	8	20

TABLE – 4
Post-Operative Sensory Improvement

Sensory Modality	Excellent	Good	Fair	Poor
Pin prick	20	9	2	9
Joint Position	17	7	6	10
Vibration	19	8	4	9

tients grafting and instrumentations (web-morley) was performed. Six (6) patients have kyphotic deformity (Gibbus) underwent for anterior carpectomy and grafting done followed by posterior instrumentation with Harrington rod system.Two (2) patients has atypical tuberculosis involving posterior element, in these patients posterior approach were used. Postoperative sensory improvement is shown in Table 4.

DISCUSSION:

Most of the large series have reported similar incidence of this disease in two genders. In our series there was no sex preponderance. All patients in our series had a localized spinal pain as a common presenting feature. This symptom also correlates with other studies. [14,15]

Gibbus was present in 25 % of patients, which is too consistent with other series.[16]Although TB spine dose not present with 100% neurological deficit but the proportion of patients with neurological deficit was 100 % in our study. This is higher than the 15 - 40 % incidence of neurological deficit reported by most of the other workers.[17] By the time patients with spinal tuberculosis are referred to Neurosurgery ward, they usually have advanced disease and have developed a neurological deficit. The other reason is lack of awareness; most of the patients reached the hospital when their disease is quite advanced. Therefore high incidence of neurological deficit in patients of this series is not a true indicator of its actual incidence in spinal tuberculosis.

Fusion rate of grafting bone was 70% in nine month postoperatively in 85-90% 1½ years postoperatively, after anterior debridement and bone grafting, this is too consistent with other studies.[18]

Atypical tuberculosis involving the posterior elements causing cord compression although relatively uncommon entity. Result of surgical de-compression (Posterior approach) is good as compared to non-tuberculosis compression. In other series posterior elements are also uncommon involvement of tuberculosis spine.[19]

20% of patients having kyphosis and operated by anterior decompression and grafting with or without instrumentation showed correction in the degree of kyphotic angle. Six patients (76.92) had excellent outcome while two had fair outcome after six months follow up. This value is comparable with other large studies.[20]

Fever was present preoperatively in only 26.6% of patients in our study. In other series also fever has not been a common finding.[21]

In our series mid thoracic region was the commonly affected spinal region. This is in accordance with the results of other series.[22]

Out of forty cases we have encountered only two cases (5%) of atypical spinal tuberculosis. In both cases disease was localized posteriorly, which is 2-10% in other series.[23,24]

CONCLUSION

Long standing local pain, neurological deficit and gibbus are among the most common clinical features encountered in patients with spinal tuberculosis. Patients with neurological deficit, large paravertebral abscess and spinal deformity undergo for surgical intervention shows better outcome.

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