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Original Research Article

Epidemiological pattern of Osteoarticular Tuberculosis in a Teaching hospital of Rural India: A prospective study

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Abstract

Introduction: Tuberculosis (TB) is the most common cause of death from infectious disease world-wide. In India every year almost twelve lakh patients are notified as having newly diagnosed TB and the percentage of notified cases is only about 58%. This study evaluates the epidemiologic parameters of osteoarticular tuberculosis in a teaching hospital of north India primarily catering to rural population.

Materials and Methods: All cases of osteoarticular tuberculosis diagnosed in our hospital between January 2014 to March 2016 were analysed for various epidemiologic parameters like age, sex, anatomical site, delay in presentation and associated pulmonary TB.

Results: The spine was the most commonly affected anatomical site (50.77%) followed by hip seen in thirty-seven patients (19.17%). Males were affected more commonly than females. Eighty-seven percent of patients belonged to low socioeconomic strata.

Conclusion: This study depicts the high prevalence of musculoskeletal tuberculosis in rural population. A high index of clinical suspicion coupled with radiologic examination is necessary to diagnose and treat bone and joint TB. Delayed diagnosis and treatment is associated with complications and poor outcome.

Keywords: Musculoskeletal tuberculosis, BJTB, Osteoarticular TB, Epidemiology.

1. Introduction

Osteoarticular tuberculosis accounts for 1 to 5 percent of all tuberculous infection with spine being most commonly affected constituting about half of the patients followed by hip and knee respectively [1,2]. Musculoskeletal tuberculosis is most common in first three decades of life although no age is immune and cases are seen from neonates to 80 years of age. Musculoskeletal tuberculosis is distributed almost equally among males and females. Infection of the bone and joints is caused by haematogenous spread from a primary lesion elsewhere mostly of the respiratory tract, GI tract or Genito-urinary tract; it may occur shortly after the primary infection or may be seen years later as a disease reactivation [3]. Vertebral tuberculosis comprises almost 50% of cases and reported incidence of tuberculosis of hip is around 15% followed closely by knee at 10% [4,5]. Tuberculosis of elbow ankle and shoulder is relatively uncommon as compared to hip and knee which are frequently involved. It can also involve the short bones of foot and hand including carpus. Tuberculous osteomyelitis is an uncommon form of extra-pulmonary tuberculosis, representing less than five percent of cases of osteoarticular tuberculosis [6]. Rare forms of tuberculous osteomyelitis include closed multiple diaphysitis, multiple cystic tuberculosis, disseminated skeletal tuberculosis, and tuberculous dactylitis[7-9]. The multiple cystic forms are seen usually in children, and involve multiple cystic areas of rarefaction in the metaphysic [10-13].

The main objective of this study was to evaluate the various epidemiological parameters like anatomical site, age, gender distribution, presentation, primary lesion and any associated complication.

2. Materials and Methods

This prospective study was done in a tertiary care center of north India primarily catering to rural population. All patient diagnosed as Musculoskeletal tuberculosis at our hospital between January 2014 to March 2016 were included in this study and were evaluated for epidemiological parameters like anatomical site, age and gender distribution, delay in presentation and associated pulmonary tuberculosis. Review of data was done using appropriate statistical tests and results obtained were compared with previous studies for comparison and discussion.

3. Results

A total of 193 patients diagnosed as osteoarticular tuberculosis between January 2014 to March 2016 at our institute were included in this study. Eighty-six of the patients (44.55%) were females and the average age was thirty-nine years with a range of 11-82 years. Males constituted 55.44% of patients in our series. Most of the patients in our series belonged to low socioeconomic strata with 87.04% being below poverty line. Seventeen patients (8.80%) had concomitant pulmonary tuberculosis.

The spine was the most commonly affected anatomical site constituting half of the patients. Ninety-eight (50.77%) patients were diagnosed with spinal tuberculosis; 9 patients had involvement of the cervical spine, 30 the thoracic spine, 10 both thoracic and lumbar spines, in forty-four patients lumbar spine was involved and 5 patients had involvement of the lumbo-sacral spine. The second most common site was the lower extremity: 37 patients (19.17%) had tuberculosis of hip joint (Table 1). In twenty-one, the knee was involved followed by sacroiliac joint in 15 patients. There were four patients in which ankle joint was involved and one case each of patella and pubis. Two patients presented with tuberculosis of metatarsals.

Shoulder was most common involved site in upper extremity constituting five cases being equaled by wrist having similar number of cases and followed closely by four cases of elbow joint. Scapula was affected in one case. The incidence of disease in upper extremity was comparatively low as compared to lower extremity.

Table 1: Showing Anatomical region involved and percentage

Sr. No	Anatomical Site	Number	Percentage
1	**Spine**	98	50.77
	Cervical	9	4.66
	Dorsal	30	15.54
	Dorsolumar	10	5.18
	Lumbar	44	22.79
	Lumbosacral	5	2.59
2	Hip	37	19.17
3	Knee	21	10.88
4	Sacroiliac joint	15	7.77
5	Ankle	4	2.07
6	Metatarsals	2	1.03
7	Patella	1	0.51
8	Pubis	1	0.51
9	Shoulder	5	2.59
10	Elbow	4	2.07
11	Wrist	5	2.59

4. Discussion

India harbors one fourth of world's burden of tuberculosis. Pulmonary tuberculosis is the most common entity; musculoskeletal tuberculosis constitutes 10-30% of all diagnosed cases of TB[14,15]. In a study of osteoarticular TB by Yoon HJ et al., it was found out that musculoskeletal tuberculosis was the third most common type of Extra pulmonary tuberculosis, after pleural and lymph node Tuberculosis [16]. Revised National Tuberculosis Control Programme (RNTCP) in a one year study period in India published similar findings. In this study however lymph node involvement was the commonest and bone and joint involvement was third preceded by pleural [17]. There is an increase in the prevalence of tuberculosis in general including musculoskeletal tuberculosis in the developed countries including USA in the recent years [5]. Similar increased prevalence of osteoarticular tuberculosis was reported in a study of Netherlands population. The reason for this increased prevalence was linked to many factors one of which being immigration [15].

In our study the mean age was 39 years which was similar to study by Enache et al., in which more than sixty percent of patients were more than 40 years of age [3]. However, a few studies have reported extrapulmonary tuberculosis to be more frequent in children [5]. In another study the median age was found to be more than 50 years. Spinal tuberculosis like any other skeletal tuberculosis is most common in first three decade of life particularly in high prevalence areas [18,19].

In our series males were involved in 55.44% which is consistent with similar studies by Ware F et al., and Enache et al[3,17]. However, in studies by Muangchan, Jutte and Yoon a female predominance was reported [15,16,19]. An epidemiologic study at a teaching institute in Thailand reported ninety-nine cases of skeletal tuberculosis during a 2-year period, which is almost half the number of cases in our study [19]. In our study, 193 cases were diagnosed in 2 years duration, which is way higher depicting the increased prevalence of disease in our catchment area. Musculoskeletal tuberculosis is mostly secondary form of tuberculosis with primary elsewhere; most often the spread is through haematogenous route [3]. In our study concurrent pulmonary tuberculosis was found in seventeen patients constituting 8.80%. This was low as compared to results published by Watts and Lifeso[5]. In another study of musculoskeletal tuberculosis by Jutte et al the incidence of concurrent pulmonary TB was 15%[15]. A study on osteoarticular tuberculosis by Muangchan and Nilganuwong found this concurrence to be at 30.3% which is way higher than our results [17].

Spine is the most commonly involved anatomical site in most of the published series dorsal spine is most often involved followed by lumbar and dorsolumbar junction. In our series spine was involved in almost half of patients comprising 50.77%. Lumbar spine was most commonly involved in forty-four cases followed by dorsal spine in thirty cases.

Eighty-seven percent of our patients belonged to below poverty line, highlighting socioeconimc status as an

important epidemiologic parameter. Low socioeconomic status is associated with poor hygiene, crowded accommodation, lack of sanitation facilities and lack of awareness. There was an average delay of 24 weeks in presentation to hospital from onset of symptoms in our series. In a study by Jutte et al., there was a mean delay of 35 weeks in diagnosis of non-spinal osteoarticular TB [15]. In a study by Hodgson SP a delay in diagnosis was seen especially in Caucasian population [20].

Diagnosis in our series was based on clinical signs and symptoms, x-ray findings, and MRI, histopathology was done only in selected patients. Constitutional symptoms were present in only 45% of our cases. Ramlakan and Govender in their study had constitutional symptoms in all the patients [21]. A high index of clinical suspicion coupled with radiologic examination was sufficient to diagnose most of the cases in our series. A raised ESR was seen almost in all patients but its non-specific. Biopsy is Gold standard in diagnosis of EPTB. Watts and Lifeso in their study suggest that in area of high prevalence and limited resources, the treatment can be started without biopsy based on clinical features and X-ray findings [5]. We also opine that in the settings of high prevalence with limited resources as in developing countries, ATT can be started empirically based on clinical suspicion and radiologic findings without biopsy. All the diagnosed patients were started on ATT and each case was reviewed individually regarding surgical management if needed.

5. Conclusion

This study depicts the high prevalence of musculoskeletal tuberculosis in rural population. A high index of clinical suspicion coupled with radiologic examination is necessary to diagnose and treat bone and joint TB. Delayed diagnosis and treatment is associated with complications and poor outcome. A patient presenting with back pain for more than one month even without constitutional symptoms should be subjected to x ray examination to early detect any TB lesion in such cases.

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