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Osteoarticular Tuberculosis - A Study Associated with Socio Demographic Factors

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ABSTRACT

Background: Approximately 30 million people are currently affected by tuberculosis worldwide and 3% of them have skeletal involvement. Osteoarticular tuberculosis can cause significant morbidity and a high index of suspicion is needed for early diagnosis so as to avoid destruction and disability. **Methods:** Present study was carried out on 120 patients admitted in Sarswati Institute of Medical Sciences, Hapur. Data of all osteo tubercular patients were collected from medical record department; information was collected regarding patient's general and medical information like age, sex, religion, occupation, areas, type of joint involvement, duration of hospital stay and associated medical problems and type of investigation and their finding were recorded and analysed. **Results:** This study was carried out on 120 patients in which 76 (63.3%) were Male and 44 (36.7%) were female. maximum were in the age group of between 31-40 years. The cases of rural background were higher than the urban. common osteotuberculr site was Spine 92(76.7%). **Conclusion:** The comments site of osteoarticular tuberculosis is the spine and the rural population were more involved in osteoarticular tuberculosis. Tuberculosis in extrapulmonary sites is more and more frequent.

Keywords: Osteoarticular tuberculosis, morbidity, extra-pulmonary, Spine.

INTRODUCTION

Approximately 30 million people are currently affected by tuberculosis worldwide and 1-3% of them have skeletal involvement.[1] It is a major health problem in the Indian subcontinent.2 As TB is endemic in India, most orthopedic surgeons diagnose osteoarticular TB based on clinical and imaging findings only and initiate empirical anti-TB treatment. it remains a significant worldwide problem, being a source of functional disability, which could lead to severe infirmities.

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Therefore, it should be recognized and treated early, particularly in children, given that appropriate management can lead to a full recovery.[3,4] This secondary tuberculosis is the result of tuberculous process development in bone, joints or both. Osteoarticular lesions usually occur following a paucibacillary haematological dissemination by the fixation of a colony inside the active bone marrow. Osteoarticular tuberculosis can cause significant morbidity and a high index of suspicion is needed for early diagnosis so as to avoid destruction and disability.[5-7] Even with adequate medical and surgical treatment, osteoarticular TB can be associated with morbidity and mortality.[8] it usually takes the form of arthritis or osteomyelitis. Rarely it can present as tenosynovitis or bursitis. The common sites of involvement are spine and weight bearing joints. Osteoarticular tuberculosis is commonly encountered in the elderly in developed countries but in developing countries like India it is common around 30 years of age. The retrograde lymphatic dissemination (i.e., from the mediastinal lymph nodes to the dorsal spine or from the mesenteric lymph nodes to the lumbar spine) or the contiguity disseminations (such as rib tuberculosis following pleurisy or humeral head tuberculosis secondary to a shoulder bursitis) should be mentioned among other less significant mechanisms involved in the pathogenesis of osteoarticular tuberculosis.[9] The main reasons for this epidemiological trend include an increase in immigration from regions in which tuberculosis is endemic, the increasing number of people with suppression of the immune system, ageing of the population, and development of drug-resistant strains of Mycobacterium tuberculosis.[10-

[13]The annual risk of TB in high burden country is estimated 0.5 to 2 %. India is the highest TB burden country in the world and accounts nearly one- fifth (20%) of global burden of TB. Every year approximately 1.8 million persons develop tuberculosis; of which about 0.8 million are new smear positive highly infectious cases.[14] Osteoarticular tuberculosis (TB) represents 1–5% of all cases of tuberculous disease and 10–18% of extra pulmonary involvement.[15,16] Signs and symptoms are frequently nonspecific and easily misdiagnosed as brucellosis, aspergillosis , spondylitis, tumor metastasis and juvenile rheumatoid arthritis.[17-19] Moreover, up to 50% of patients do not show concurrent pulmonary disease. Mycobacterial culture and drug susceptibility is not performed as a routine test owing to a perceived misconception that it is difficult to achieve bacteriological diagnosis of osteoarticular TB. It is common practice to see patients being managed by un-indicated, irregular and incomplete treatment schedules.[20] The aim of this study is to find out the trend of various osteoarticular tuberculosis and to study the socio demographic factors in relation to TB.

MATERIALS AND METHODS

The present study was carried out on 120 patients admitted in Sarswati Institute of Medical Sciences, Hapur. Information was collected from medical record department; regarding patient's general and medical information like age, sex, religion, occupation, areas, type of joint involvement, duration of hospital stay and associated medical problems and type of investigation and their finding were recorded and analysed. Data was collected within the duration of three years. The study was approved by the ethical committee of the hospital. Written consent was taken from all the patients of osteoarticular TB. The clinical features suggesting the diagnosis were symptoms such as pain, swelling in the joints, fever, loss of weight/appetite, cough, breathlessness, tenderness, effusion, restriction of movements, elevated ESR, and history of pulmonary TB or past TB diagnosed by either X-ray or Magnetic Resonance Imaging (MRI)/Computed Tomography (CT). Gram stain and Acid Fast Bacilli (AFB) stain, histopathology, routine bacterial culture, and mycobacterial culture using the Mycobacteria Growth Indicator Tube (MGIT) System, plus Lowenstein and Jensen (L.J.) media and in-house nested PCR were also done. Biopsies were performed to check osteoarticular TB, especially the presence of necrotic epitheloid granulomas with multinuclear giant cells. All the results obtained were corroborated with clinical profiles on the basis of proforma filled out by the surgeons. Statistical analysis was performed using IBM SPSS.

RESULTS

This study was carried out on 120 patients in which 76 (63.3%) were Male and 44 (36.7%) were female. maximum were in the age group of between 31-40 years, than 35.8% cases in the age group of between 21-30 years, 20% cases in the age group of between 31-40 years and 5.8 % cases belongs to above 50 years.

Table 1: Cases of Osteoarticular tuberculosis according to their socio-demographic profile

Category	Cases	Percentage
Age groups		
0-20	24	20%
21-30	43	35.8%
31-40	46	38.3%
50 and above	7	5.8%
Sex		
Male	76	63.3%
Female	44	36.7%
Religion		
Hindu	68	56.7%
Muslims	42	35%
Others	10	8.3%
Occupation		
Farming	37	30.8%
Civil servant	12	10%
Businessman	16	13.3%
Private sector	21	17.5%
Students	2	1.7%
House holders	32	26.7%
Area		
Rural	96	80%
Urban	24	20%

Our study showed religion wise distribution in which 56.7% cases were hindu, 35% were muslims and 8.3 % cases from other religion. Hindu were maximum in religion wise distribution. The cases of rural background were higher than the urban, in which 80% cases belong to rural area and 20%

from urban area. Occupationally farmers 30.8% were more involved in osteoarticular TB, Civil servant were 10%,businessman were 13.3%, cases from private sector were 17.5%, students were 1.7%, and house holders were 26.7% [Table 1, Figure 1-5].

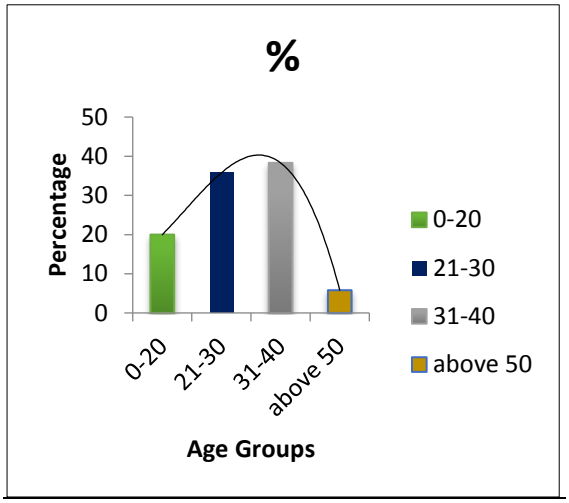

Figure 1: Age wise distribution of cases

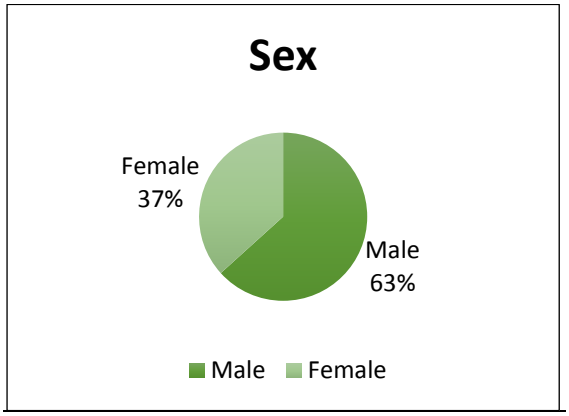

Figure 2: Gender wise distribution of cases

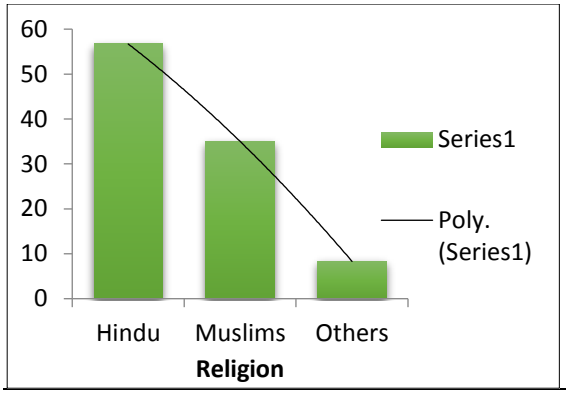

Figure 3: Religion wise distribution of cases

According to site of the joint various Regions/Joints were involved, most common osteotuberculr site was Spine 92(76.7%) followed by Hip14 (11.7%), least common site observed in our study was shoulder joints (1.7%). Elbow joint involved in 3.3% cases, knee and ankle joint involved in 4.2 and 2.5% cases. All the cases admitted to the ward were asked to undergo various laboratory investigations including x-rays, ESR, Monteux test, Sputum positivity.

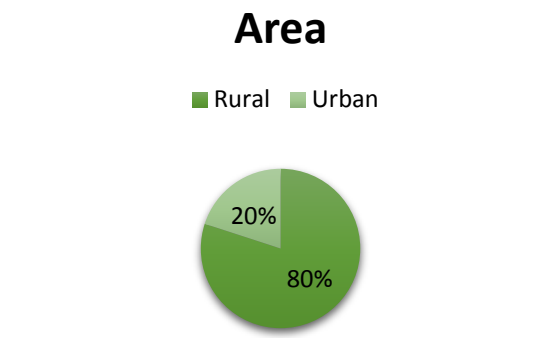

Figure 5: Area wise distribution of cases

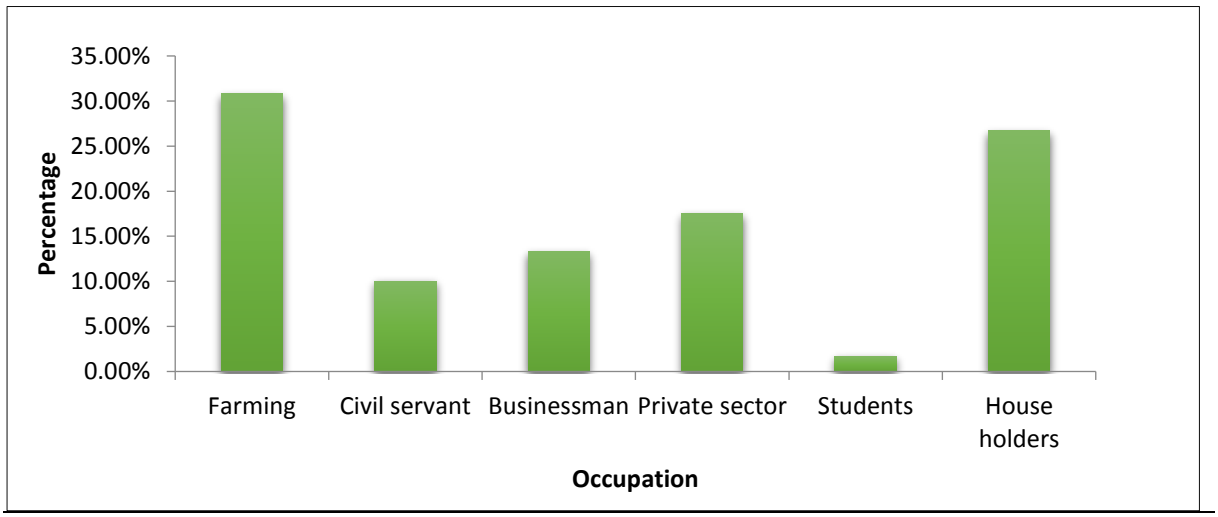

Figure 4: Occupation wise distribution of cases

Investigation showed that the ESR positive in 36.8% in male and 59% in female, Monteux test positive in 19.7% in male and 15.9% in female, 3(3.9%) of the male cases tested positive for sputum for Acid Fast Bacilli as opposed to 2(4.5%) cases belonging to the female gender , suggestive x ray findings of osteoarticular TB were found in 13.1% cases of male and 15.9% cases of female. Suggestive MRI findings were 15.9% in male cases and 20.4% in female cases. Known case of TB were 22.4% Males and 11.4% females, operative procedure required in 22.4% in males and 50% in females. No investigation done in 7 males and 9 females. In laboratory investigations Erythrocyte Sedimentation rate (ESR) may be considered for probable diagnosis.

Table 2: Cases of Osteoarticular tuberculosis according to their joint involvement

Joint Involved Cases (%)	Cases	Percentage (%)
Shoulder	2	1.7%
Elbow	4	3.3%
Hip	14	11.7%
Knee	5	4.2%
Spine	92	76.7%
Ankle	3	2.5%

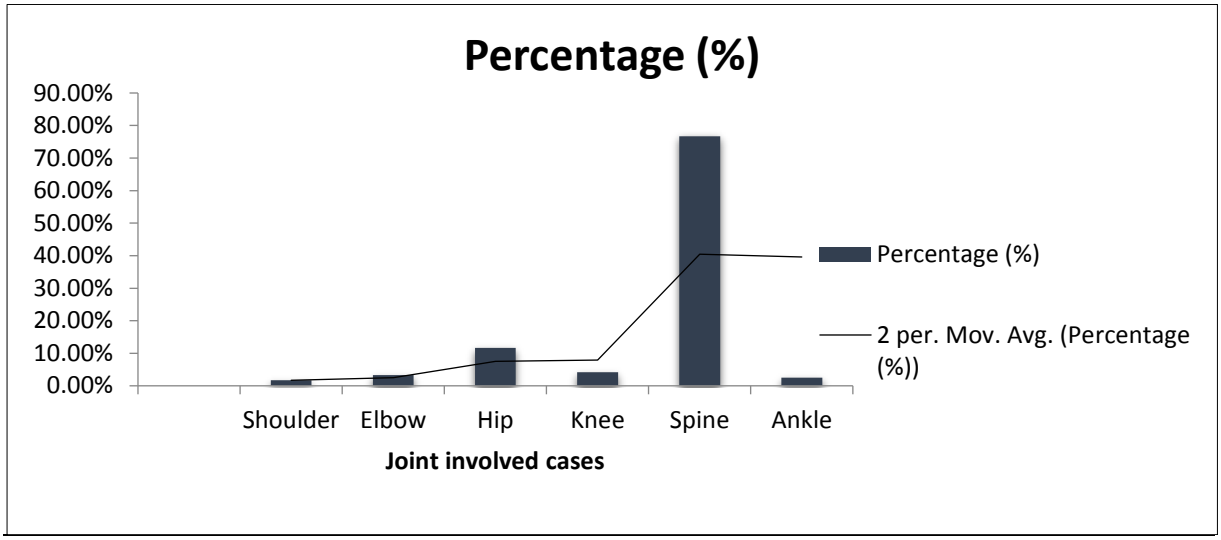

Figure 6: Cases of Osteoarticular tuberculosis according to their joint involvement

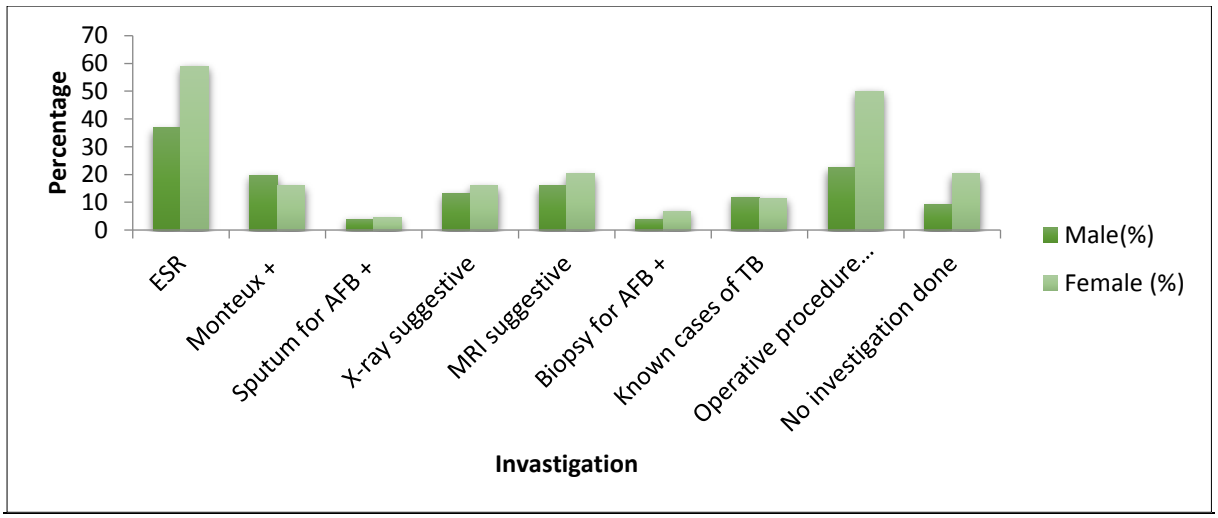

Figure 7: Cases of Osteoarticular TB according to investigation performed

DISCUSSION

Present study was reported 120 cases of osteoarticular TB in last three years, Osteoarticular tuberculosis remains a significant worldwide problem, being a source of functional disability, which could lead to severe infirmities. Therefore, it should be recognized and treated early. As TB is

endemic in India, most orthopedic surgeons diagnose osteoarticular TB based on clinical and imaging findings only and initiate empirical anti-TB treatment. In the present study Osteoarticular TB to be maximum in the spine followed by the hips and the knees while a some percentage of cases in other sites –ankle, long bones, hand joints, elbow, shoulder, ribs, pelvis, foot and hand bones. In laboratory investigations Erythrocyte Sedimentation rate (ESR) may be considered for probable diagnosis. maximum were in the age group of between 31-40 years. PCR technique is a rapid and accurate method for determining the presence of mycobacteria in biological samples, thus avoiding a MT culture;[21-25] this technology provides the unique possibility of accurately determining the mycobacterial DNA, even in cases where cultures are impossible.[26-29]

Table 3: Cases of Osteoarticular TB according to investigation performed

Investigation	Male	Percentage	Female	Percentage
ESR	28	36.8	26	59
Monteux +	15	19.7	7	15.9
Sputum for AFB +	3	3.9	2	4.5
X-ray suggestive	10	13.1	7	15.9
MRI suggestive	12	15.9	9	20.4
Biopsy for AFB +	3	3.9	3	6.8
Known cases of TB	9	11.8	5	11.4
Operative procedure required	17	22.4	22	50
No investigation done	7	9.2	9	20.4

Yoon HJ et al., found out that BJTB formed the 3rd most common type of EPTB, after pleural and lymph node TB.[30] Similar findings were published in study of National and district level survey conducted under Revised National Tuberculosis Control Programme (RNTCP) in one year period in India. In this survey however lymph node involvement was the commonest, followed by pleural and bone and joint involvement. The bone and joint TB in that study at district level comprised 8.9% of cases.[31] Watts and Lifeso in their review found an increasing prevalence of TB in USA, both pulmonary and BJTB which is attributed to various factors.[10] Jutte et al., also found increasing prevalence of BJTB in Netherlands in recent years, mainly in non-Dutch subjects.[12]

There is usually a long delay in diagnosis, due partly to its tendency to mimic other diseases as a result of its varied clinical presentation and radiographic appearance.[32-34] TB arthritis should be considered in patients who present with indolent symptoms of chronic tenosynovitis.[35] Early diagnosis of arthritis due to TB is essential to preserve the articular cartilage and joint space. The mainstay of treatment is multidrug anti-TB therapy (for 12-18 months) and active-assisted non-weight-bearing exercises of the involved joint throughout the period of healing. Operative intervention (synovectomy and debridement) is required when the patient is not responding after 4-5 months of anti-TB therapy. In our study we have followed the local population especially the rural set up in a tertiary care hospital and have highlighted the above points and also tried to understand the various physical and psychosocial plaguing the general population leading to improper treatment and hence increasing the morbidity and mortality.

CONCLUSION

The comments site of osteoarticular tuberculosis is the spine, according to the outcome, it is very important to have a high level of clinical suspicion, especially in patients at risk in countries like India with a high prevalence of tuberculosis. The rural population were more involved in osteoarticular tuberculosis. Tuberculosis in extrapulmonary sites discovered in surgery departments is more and more frequent. it shows that how skeletal tuberculosis is actually managed in our environment (Hospitals) where the disease remains a public health issue, but significant, percentage of osteoarticular involvement.

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