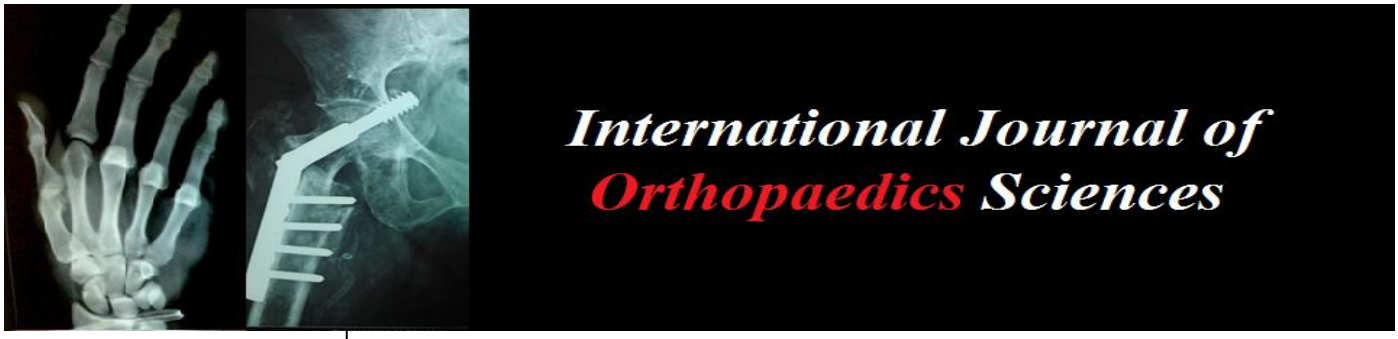

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Clinical profile of patients with Non-Tuberculous spondylodicitis: A retroprospective comparative study

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Abstract
Pyogenic spondylodiscitis (PS) is more common in patients aged over 50 years and it represents only 1-2% of bone infectionsin pediatric age. The incidence has been rising through the combined effect of an increase in the susceptible population (immunosuppressed and ageing population), intravenous drug use, rise in healthcare-associated infection, spinal surgery and improved ascertainment, due to better diagnosis. Of 173 patients, 15 patients with incomplete follow-up, incomplete radiographic data and 7 patients with inconclusive etiological diagnosis were also excluded. The remaining 151 patients formed the basis of the study. Mean duration of symptoms was 6 weeks in NTS and 14 weeks in TS. Back ache is the most common clinical feature seen in all patients (100%). Fever in NTS (71.1%) and deformity in TS (34.3%) were 2nd most common clinical features respectively. Neurological deficits and symptoms (radiculopathy/parasthesias) were present in 30.3% of TS and 21.1% of NTS.

Keywords: Non-Tuberculous Infections of Spine, Pyogenic spondylodiscitis, Spondylodiscitis

Introduction
Infection of the spine is an ancient disease, with tuberculosis being described in human skeletons dating back to the Iron Age. In India, Rigveda and Atharvaveda (3500-1800 BC approx.), Samhitha of Charaka and Sushruta (1000 and 600B.C. approx), have mentioned this disease by the name "Yakshma" and all its forms [1]

Sir Percivall Pott (1779) was credited for stating a classical description of tuberculosis of the spine. The basic microscopic lesion "The tubercle" was discovered by French physician Laennec (1781-1826) in the beginning of nineteenth century. The causative organism was discovered by Robert Koch (1843-1910) in 1882. [2]

Spondylodiscitis represents 3–5% of all cases of osteomyelitis. Estimated ncidence in developed countries range from 4-24 per million per year [1], depending on geographical location and inclusion criteria of the studies. Though all ages can be affected, few studies report a bimodal age distribution with peaks at age less than 20 years and in the group aged 50-70 years. Spondylodiscitis has a male to female ratio of 1.5:1, with a male preponderance [3]

Tuberculosis (TB) is the commonest cause of spinal infection worldwide. About 10 million people fall ill from TB every year. Skeletal involvement occurs in 1%–3% of patients with TB infection. Tubercular spondylodiscitis (TS) represents 50% of skeletal TB [8]. In the largest epidemiological study of spondylodiscitis to date, spinal TB was significantly commoner in age group under 40 years than those over 40. [4]

Pyogenic spondylodiscitis (PS) is more common in patients aged over 50 years and it represents only 1-2% of bone infections [9] in pediatric age. The incidence has been rising through the combined effect of an increase in the susceptible population (immunosuppressed and ageing population), intravenous drug use, rise in healthcare-associated infection, spinal surgery and improved ascertainment, due to better diagnosis. [5]

Brucellosis, the commonest zoonosis in endemic areas. It can account for 21–48% of spinal infections. This infection is more common in Mediterranean areas, south Central America, Africa, Arab peninsula, Indian subcontinent and the Middle East. Spinal involvement which is the fore most cause of the debilitating and disabling complications is seen in 6–12% of cases of brucellosis [6]

Methodology

Study population: One hundred and seventy three patients (173) who presented to our center and had a diagnosis of spondylodiscitis.

Study design: Retrospective study of 173 patients, 15 patients with incomplete follow-up, incomplete radiographic data and 7 patients with inconclusive etiological diagnosis were also excluded. The remaining 151 patients formed the basis of the study

In the 151 patients who were included - clinical, laboratory, radiological and follow up analysis was done

- Their clinical findings & history was assessed from the medical records.
- Pre and post treatment laboratory findings were analyzed from records
- Radiological data was obtained from online server (RISPACS)
- A detailed evaluation of clinical features- fever, back pain (Visual Analogue score), discharging sinus, swelling, deformity, neurological status (graded as per charting by Kumar and Tuli; ASIA scale (American Spinal Injury Association).
- A detailed history of TB or TB contact, cattle stocking, previous surgeries (within 3 years), and associated co-morbidities was taken
- Local spine, Systemic and per abdominal examination was done to rule out other focus and cold abscess

Results

Table 1: Distribution of NTS and TS cases

Diagnosis	No. of cases
Tubercular spondylodiscitis	99
Pyogenic spondylodiscitis	24
Brucella spondylodiscitis	28
Nontuberculous-spondylodiscitis (NTS)	52

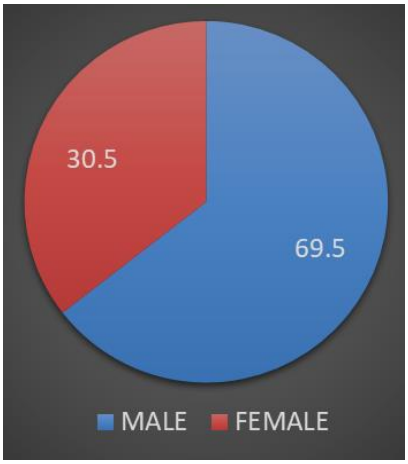

Fig 1: Gender distribution

Of 151 patients 105(69.5%) were males and 46(30.5%) were females

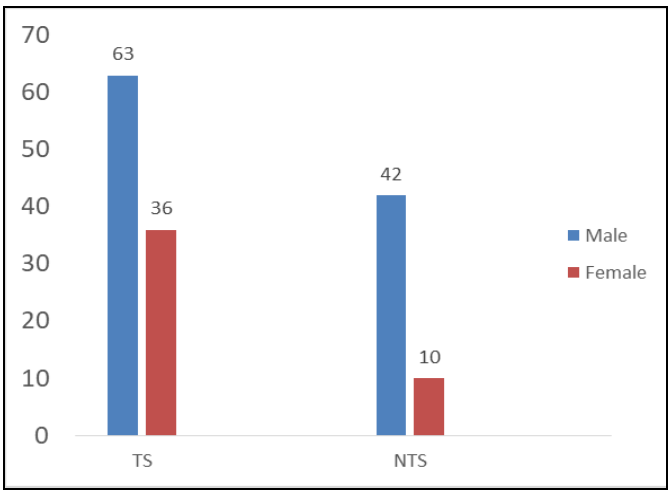

Fig 2: Group wise gender distribution

67.6% of TS were male and 80.39% of NTS were male. In this study incidence of spondylodiscitis is more in males. No significant differences of occurrence with regard to gender was noted between NTS and TS in this study.

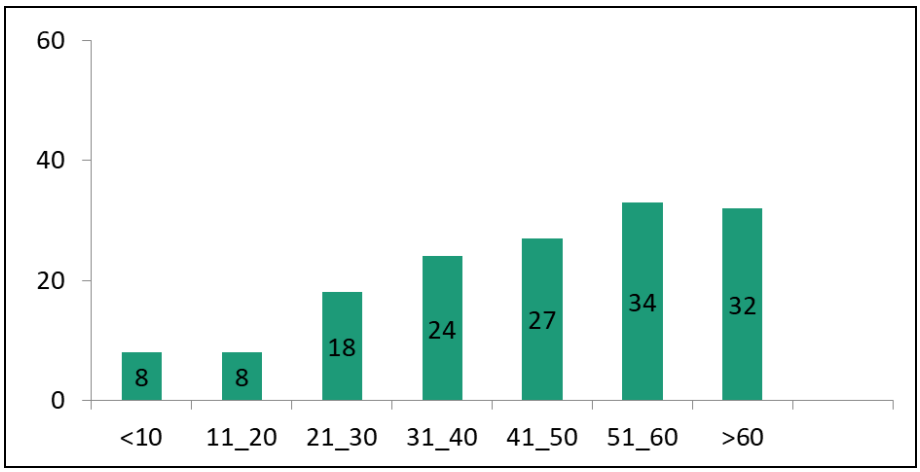

Fig 3: Age distribution

The mean (SD) age of the participants was 45.23years (18.38) (range 4-82 years). 85.5% of the individuals belonged to the age group more than 20 years and the largest number of patients fell in the age >50 (41% of NTS and 47% of TS). No significant differences of occurrence with regard to specific age in both groups noted in this study (p>0.05)

Table 2: Clinical Features

Clinical features	BS (%)	PS (%)	NTS (%)	TS (%)	P-Value
Mean age (SD)	46.1	48.03	47.04(17.6)	44.29(18.7)	>0.05
Gender(M/F)	81.6	78.2	80.39(M)	63(M)	>0.05
Mean duration	4weeks	8weeks	6weeks	14weeks	<0.05
Pain	28(100)	24(100)	52(100)	99(100)	>0.05
Fever	16(57.1)	21(87.5)	37(71.1)	29(29.2)	<0.05
Deformity	3(10.7)	5(20.8)	8(15.3)	34(34.3)	<0.05
Neurologicalsymptoms	6(21.4)	5(20.8)	11(21.1)	30(30.3)	<0.05
T2DM	8(28.5)	17(70.8)	25(48.07)	17(17.1)	<0.05

Mean duration of symptoms was 6 weeks in NTS and 14 weeks in TS. Back ache is the most common clinical feature seen in all patients (100%). Fever in NTS (71.1%) and deformity in TS (34.3%) were 2nd most common clinical features respectively. Neurological deficits and symptoms (radiculopathy/parasthesias) were present in 30.3% of TS and 21.1% of NTS.

Diabetes mellitus (48.07%) and history of previous spinal procedures (within 3 years) (17.3%), history of consumption of unpasteurized milk and cattle breeding (57.14%) are more frequently associated with NTS.

7/24 (29.1%) of pyogenic discitis had a history of previous surgery. 4 patients had a past h/o pulmonary tb, 1 had tbendometritis, 1 had tb lymphadenitis

Discussion

Spondylodiscitisis a relatively rare disease, associated with significant burden of disability due to delay in presentation and clinical diagnosis. There is a paucity of Indian data on this subject. Our study attempted at providing an Indian perspective on the disease and also differential findings between NTS and TS in terms of etiological, clinical, radiological and prognostic characteristics. The incidence of spondylodiscitisis is increasing owing to frequent use of invasive procedures, spinal surgery, and growing number of immune suppressed patients and people with chronic debilitating diseases [7].

2/3 rd of the cases were tubercular in nature in our study, which can be attributed to endemicity of TB in this geographical region. In Similar Indian retrospective study done by Nisha jose *et al.* [7], 35 out of 61 patients of spondylodiscitis were tubercular in nature.

In our study 34% of patients were NTS, which included BS (16%) and PS (18%). We had no cases of fungal spondylodiscitis and spinal infection by rare organisms like *Burkholderia pseudomallei* (melidiotic spondylodiscitis), *Bartonella henselae* (cat scratch disease), parasitic spondylodiscitis in our study.

In a retrospective multicentric study of 219 cases in Spain done by JD Colmenero *et al.* [8] had 48% of patients were brucellar, 33% were pyogenic. In a prospective study of 75 patients by Tuba Turunc *et al.* [9] in Turkey had 45% TS patients. The difference in the incidence can be attributed to various factors like endemicity in the particular region, sample size, duration of study period etc.

Mean duration of symptoms was 6 weeks in NTS and 14 weeks in TS. It ranges between 2-14 weeks in other studies. Frequency in males ranging from 51%- 81% in various studies. Konstam, Blevosky and Tuli noted that over 50% of their cases were seen in the first three decades of life and few studies reported bimodal distribution.

Mean age (SD) was 45.23 (18.38) overall, 14.5% in < 20 years and 44% >50 years in our study and no significant differences of occurrence with regard to specific age, sex in both TS or NTS groups was noted. However overall males and elderly age group was affected more.

The clinical picture of spondylodiscitis is quite nonspecific. The most frequent symptoms are back pain and paravertebral muscle spasm, seen in 94-100% as reported in literature. In our study, the most frequent symptom was back pain on admission regardless of the causative agent in all the cases (100%).

Overall 43.7% patients presented with fever. Fever might even be absent in PS, like in our study it is absent in 12.5% patients. Likewise, in studies by Colmenero *et al.* [8] and Turunc *et al.* [9] noted that fever was absent in 30%-43.3% of the PS patients. Dufour *et al.* [10], in their comparative study of postoperative and spontaneous pyogenic spondylodiscitis, observed high fever more frequently in postoperative pyogenic spondylodiscitis patients.

Conclusion

Even though there are some clinical and radiological differences between TS and NTS, they cannot be considered as sufficient evidence to start empirical treatment. Even in the presence of classical clinicoradiological features of Pott's disease, NTS cannot be ruled out. Thus, a definitive diagnosis of NTS should be based on positive blood culture, or serological investigation, or tissue culture.

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