

RISK FACTORS OF SPONDYLODISCITIS. A SINGLE CENTER EXPERIENCE

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INTRODUCTION

Spondylodiscitis is an infection involving the intervertebral disc and adjacent vertebrae (vertebral osteomyelitis). Its incidence has doubled over the last 20 years. It was reported as the third most common form of osteomyelitis at >50 years of age. This increase in incidence is attributed to population aging, improved diagnostic tools, a higher burden of comorbidities such as diabetes and immunosuppression, and the rising frequency of spinal procedures. Moreover, the incidence is likely higher in developing regions, particularly where tuberculosis and brucellosis are prevalent. Spondylodiscitis can arise through three primary routes: haematogenous spread which is the most common, direct inoculation, and, less frequently, contiguous spread. In adults, direct inoculation often happens during spinal surgeries or procedures like injections or discectomies. Bacterial inoculation and spine contamination can occur due to diagnostic or therapeutic spinal procedure. Contiguous spread involves the infection moving from nearby structures, such as an abscess or an infected aortic graft, though this is relatively rare.

AIM OF THE WORK

The aim of this study was to determine the risk factors of this disease in order to prevent and treat the disease through avoidance of these risk factors if they were avoidable or modifying them if possible.

PATIENTS AND METHODS

The prospective study included 50 patients with spondylodiscitis presenting to El-Hadra University Hospital. Patients diagnosed with spondylodiscitis were included. Patients diagnosed of spondylodiscitis were subjected to:

- i.A detailed history taking**, including age, gender, family history of spondylodiscitis, diabtest mellitus (DM) and tuberculosis (TB).
- ii. Laboratory study**, including complete blood count (CBC), erythrocyte sedimentation rate (ESR), and C reactive protein (CRP).
- iii. Radiology study**, which consisted of plain x-ray anteroposterior and lateral, CT, and MRI. The conventional radiographs were analyzed followed by an assessment of the MRI, to provide better definition of the spinal lesions and to show the extent of the inflammatory process. Spondylodiscitis was defined by destructive or sclerotic changes with or without reduction of height of the vertebral body and a narrowed disc space.

RESULTS

Table 1 shows that age group wasn’t significantly associated with any gender or any of the other study parameters. Nonetheless, non-significant variations in distribution of some variables were noted. Cases with TB infection represented 27.6% of the individuals under 50 years compared to only 9.5% of individuals aged 50 or older (p-value: 0.24). Comorbidites were all more common in older age group, including DM (33.3% vs 13.8%; p-value: 0.193), HTN (23.8% 6.9%; p-value: 0.198), and smoking (14.3% vs 3.4%; p-value: 0.386).

Table 1: Comparing study parameters as per gender (n:50)

		Gender		
Term	Overall	Female	Male	p-value
Age (years)	Avg ± SD 46 ± 15.1	43.1 ± 15.1	48.4 ± 15	t: 0.2252
P-values obtained from two-sample t-test (t) or Mann-Whitney test (U)				
		Gender		
Term	Overall N (%)	Female N (%) (n=23)	Male N (%) (n=27)	p-value
Age group				
< 50	29 (58)	13 (56.5)	16 (59.3)	0.99
50+	21 (42)	10 (43.5)	11 (40.7)	
Infection				
No	35 (70)	16 (69.6)	19 (70.4)	0.341
TB	10 (20)	6 (26.1)	4 (14.8)	
Yes	5 (10)	1 (4.3)	4 (14.8)	
Surgical history				
No	42 (84)	20 (87)	22 (81.5)	0.409
Other	2 (4)	0 (0)	2 (7.4)	
Spine operation	6 (12)	3 (13)	3 (11.1)	
DM				
Yes	11 (22)	7 (30.4)	4 (14.8)	0.324
HTN				
Yes	7 (14)	3 (13)	4 (14.8)	0.99
Smoking				
Yes	4 (8)	0 (0)	4 (14.8)	0.161
α = 0.05. p < 0.05*, p < 0.01**, p < 0.001***				
P-values obtained from Pearson's chi-square test of independence				

Table 2 shows that males and females were comparable in terms of all study parameters with no statistically significant associations detected between gender (p-values: >0.05). TB was higher among females (26.1%) than males (14.8%) however the difference wasn’t statistical significance (p-value: 0.34). DM was also higher among females (30.4%) than males (14.8%; p-value: 0.324). Smoking was only reported by males (14.8% of males; p-value: 0.161).

Table 2: Comparing study parameters between different age groups (n:50)

		Age group		
Term	Overall N (%)	< 50 N (%) (n=29)	50+ N (%) (n=21)	p-value
Gender				
Female	23 (46)	13 (44.8)	10 (47.6)	0.99
Male	27 (54)	16 (55.2)	11 (52.4)	
Infection				
No	35 (70)	19 (65.5)	16 (76.2)	0.24
TB	10 (20)	8 (27.6)	2 (9.5)	
Yes	5 (10)	2 (6.9)	3 (14.3)	
Surgical history				
No	42 (84)	25 (86.2)	17 (81)	0.225
Other	2 (4)	0 (0)	2 (9.5)	
Spine operation	6 (12)	4 (13.8)	2 (9.5)	
DM				
Yes	11 (22)	4 (13.8)	7 (33.3)	0.193
HTN				
Yes	7 (14)	2 (6.9)	5 (23.8)	0.198
Smoking				
Yes	4 (8)	1 (3.4)	3 (14.3)	0.386
$\alpha = 0.05$. $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$				
P-values obtained from Pearson's chi-square test of independence				

CONCLUSION

This study reports the risk factors associated with spondylodiscitis, highlighting the role of diabetes mellitus and age. The study identified some key factors, such as the high rate of undetected microorganisms and the prevalence of tuberculosis in younger patients. The study highlights the importance of early empirical antibiotic therapy and the need for broad-spectrum antibiotics in cases where specific pathogens are not immediately identified. It also highlights the need for advanced diagnostic methods to identify atypical or fastidious pathogens. Future research with larger sample sizes and multi-center designs could provide more definitive conclusions and further elucidate the risk factors and outcomes associated with spondylodiscitis.