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# Infectious Spondylodiscitis: Experience of the Rheumatology Department

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**Abstract** **Original Research Article**

***Introduction*:** Infectious spondylodiscitis (IS) is increasingly prevalent, presenting significant diagnostic challenges. ***Objectives***: To investigate the epidemiological, clinical, paraclinical, bacteriological, histological, therapeutic, and prognostic characteristics of IS. ***Materials and Methods*:** This descriptive, retrospective study involved 49 patients hospitalized in a rheumatology department over a 14-year period (2004-2018) for IS management, diagnosed through clinical, radiological, histological, and bacteriological criteria. ***Results*:** The mean age of patients was 49.3 years. The male-to-female ratio was 0.6. Diabetes was the predominant comorbidity (19%). The average diagnostic delay was 5 months. Low back pain was the most common symptom (68%). General deterioration of health was observed in 45% of cases. An inflammatory syndrome was present in 88% of cases. Positive blood cultures were noted in 6 patients. Radiographic signs suggestive of IS were evident in 78.6% of cases. MRI was necessary for 80.9% of patients. Lumbar involvement was most frequent (40.5%). Disco-vertebral biopsy was performed in 26% of patients. Tuberculosis accounted for the majority of cases (52.4%). The average duration of antibiotic therapy was 6.5 months. Surgery was required in 26.2% of patients. Favorable outcomes were observed in 23.8% of cases, while 26% of patients experienced persistent neurological sequelae. ***Conclusion*:** Tuberculosis remains the predominant etiology of IS in our region. Despite advancements in imaging modalities, diagnostic delays persist, impacting both survival and functional outcomes.

**Keywords:** Infectious spondylodiscitis (IS), Tuberculosis, Diagnostic delay, Epidemiology, Clinical characteristics.



## INTRODUCTION

Infectious spondylodiscitis (IS) represents a severe infection affecting the intervertebral space and adjacent vertebrae. It can be caused by bacteria, fungi, or mycobacteria [1]. Several factors contribute to its increasing incidence, including population aging, the rise in chronic diseases such as diabetes, the increased use of invasive medical devices, and advancements in diagnostic techniques. If not promptly detected and treated, IS can lead to serious complications such as permanent neurological deficits and long-term disability [2].

## MATERIALS AND METHODS

**Study Type:** This is a retrospective descriptive study.

**Study Population and Period:**

This study involved a sample of 49 patients hospitalized in a rheumatology department. The study period spanned 14 years, from 2004 to 2018. The study focused on 49 patient records of individuals admitted to the rheumatology department. Patients included in the study were admitted for the management of a confirmed IS (infectious spondylodiscitis) before or during hospitalization, based on clinical, radiological, histological, and bacteriological criteria.

**Data Collection:**

Data were retrospectively collected from patients' medical records. The following information was extracted and analyzed :

- **Demographic Data**: Age, sex, comorbidities.
- **Clinical Symptoms**: Type and location of spinal pain, presence of radiculopathy, general health deterioration, presence of fever.
- **Paraclinical Data**: Results of biological tests (inflammatory syndrome), radiographic and MRI imaging findings.

- **Bacteriological and Histological Data**: Culture results (blood cultures, disco-vertebral biopsies).
- **Therapeutic Data**: Duration and type of antibiotic treatment, need for surgery.
- **Evolutionary Outcomes**: Clinical progression, presence of neurological sequelae, recovery rate.

**Statistical Analyses:**

Statistical analyses were conducted to describe patient characteristics and clinical outcomes. Quantitative variables were expressed as means ± standard deviation, while qualitative variables were expressed as percentages.

## RESULTS

The mean age of the study population was 49.3 years, with a male-to-female ratio (M/F) of 0.6. Diabetes was the most common comorbidity, present in 19% of participants. The average diagnostic delay was 5 months. Spinal pain was the most frequently reported symptom, affecting 83.3% of patients, primarily located in the lumbar spine (68%). The pain was inflammatory in 85% of cases. Fever was absent in one-quarter of patients, while 45% showed general health deterioration. Neurological complications were observed in 24 patients (12%) (Table 1).

A biological inflammatory syndrome, marked by elevated CRP and erythrocyte sedimentation rate, was found in 88% of patients. Radiographic imaging showed suggestive signs of spondylodiscitis in 78.6% of cases, including vertebral plate and disc destruction. MRI, performed in 80.9% of patients, provided detailed information on early inflammation, infection spread, and neurological complications (Table 2).

Blood cultures were positive in 6 patients (14.3%). Disco-vertebral biopsy was performed in 26% of participants, allowing for precise pathogen identification (Table 2). Tuberculosis was the most common cause of spondylodiscitis, identified in 52.4% of cases. Among other pathogens, Staphylococcus aureus was the most frequent, detected in 45.2% of cases, while brucellosis was responsible for 2.38% of infections (Figure 1).

On average, the duration of antibiotic therapy was 6.5 months. Surgical intervention was required in 26.2% of cases, mainly for abscess drainage or spinal stabilization. Favorable clinical outcomes were observed in 23.8% of patients, while 26% had neurological sequelae (Figure 1). The remaining patients showed partial symptom improvement (Figure 2).

**Table 1: Socio-demographic and clinical characteristics of the 49 patients with infectious spondylodiscitis**

| | (n=49) |
|---|---|
| **Sex:** | |
| Male () | 38 |
| Female (%) | 62 |
| Median age (years) | 49,3 |
| **Comorbidities:** | |
| Diabetes (%) | 19 |
| Alcoholism (%) | 4,7 |
| Cardiopathy (%) | 4,7 |
| Mean diagnostic delay (months) | 45 |
| **Pain:** | |
| Mechanical (%) | 15 |
| Inflammatory (%) | 85 |
| **Location:** | |
| Cervical (%) | 2 |
| Thoracic (%) | 30 |
| Lumbar (%) | 68 |
| Presence of fever (%) | 75 |
| Presence of stiffness (%) | 45 |
| Radicular syndrome (%) | 23 |
| Spinal cord compression (%) | 12 |

**Table 2: Biological, radiographic, and histological characteristics of the patients**

| | Percentage (n=49) |
|---|---|
| • Elevated CRP and/or ESR | 88 |
| • Presence of signs of infectious spondylodiscitis on radiographs | 78,6 |
| • Presence of signs of infectious spondylodiscitis on MRI | 80,9 |
| • Positive blood cultures | 14,3 |
| • Positive disc-vertebral biopsy | 26 |

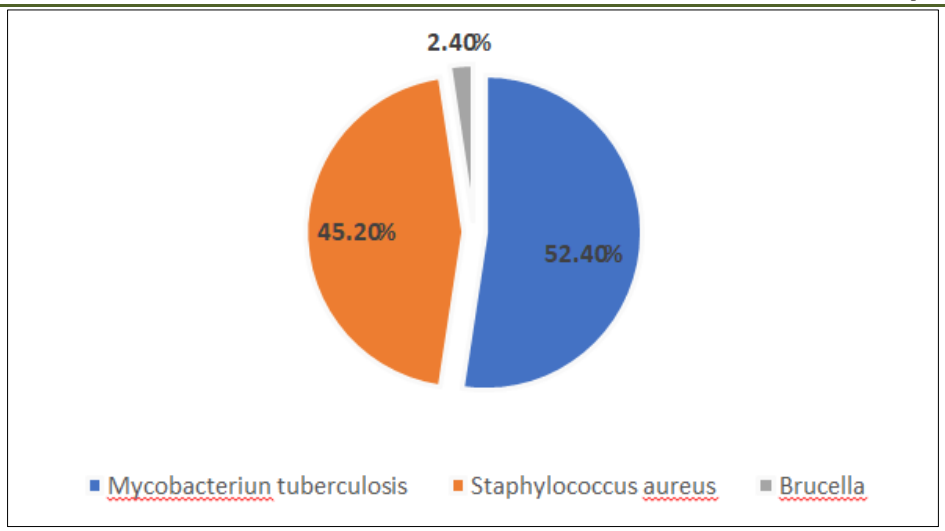


**Figure 1: Distribution of patients according to the responsible microorganism**

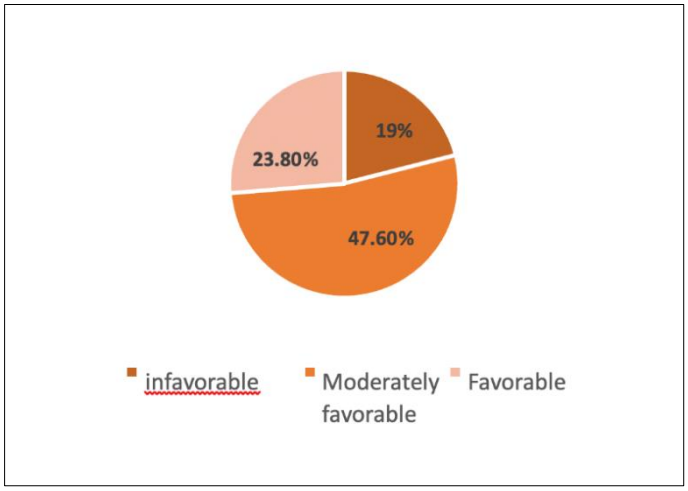


**Figure 2: Disease progression in the study population**

## DISCUSSION

Our study revealed that tuberculosis is the primary causative agent of infectious spondylodiscitis, which is particularly relevant in our endemic country context. These findings align with those of other studies, such as Lacerda *et al*., [3], which reported a significant incidence of tuberculous spondylodiscitis in endemic regions. However, Staphylococcus aureus also emerged as the main bacterial pathogen, a finding consistent with similar studies [4].

Regarding risk factors, a study conducted by Kim EJ *et al*., [5], highlighted an increased incidence of infectious spondylodiscitis, particularly in patients with comorbidities such as diabetes.

The clinical symptoms observed in our study, notably low back pain and general health deterioration, were consistent with those reported in the literature. Sobottke *et al*., [6], described similar clinical presentations, emphasizing the importance of recognizing these symptoms for early diagnosis [7, 8].

Our paraclinical findings confirm that MRI is essential for diagnosing infectious spondylodiscitis. Several studies, including that of Dhodapkar *et al*., [9], have demonstrated the superiority of MRI over standard X-rays for early infection detection and assessing its extent.

Regarding treatment, the average duration of antibiotic therapy in our study aligns with the French Infectious Diseases Society guidelines for managing infectious spondylodiscitis [10]. The need for surgical intervention in more than one-quarter of patients also reflects standard clinical practices. Herren *et al*., [11], recommend surgery in cases of complications such as abscesses or spinal instability.

Our findings highlight the necessity of early and accurate diagnosis of infectious spondylodiscitis to improve clinical outcomes. The systematic use of MRI and the early recognition of symptoms can help reduce diagnostic delays and, consequently, the risk of complications. Moreover, managing comorbidities,

particularly diabetes, is crucial to prevent infections and improve therapeutic outcomes.

**Study Limitations:**

Our study has certain limitations, particularly its retrospective nature and the limited number of patients included. Additionally, variability in patient management and diagnostic methods may impact the results. Prospective studies with larger cohorts are needed to confirm our findings and refine treatment strategies.

## CONCLUSION

This study confirms that tuberculosis remains the leading cause of infectious spondylodiscitis in our region. Despite technological advancements, diagnostic delay remains a major challenge, negatively impacting patient prognosis. A multidisciplinary approach, combining advanced diagnostic strategies with appropriate therapeutic management, is essential to improve clinical outcomes and reduce long-term sequelae of infectious spondylodiscitis.

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