



Discitis Caused by *Staphylococcus schleiferi*: Case Report

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Abstract

Pyogenic osteomyelitis affects the vertebrae and paravertebral structures. As it requires prolonged antibiotic therapy, it is essential to identify the etiological agent. The prevalence of microorganisms varies according to the demographic and clinical characteristics of the patients. Events caused by *Staphylococcus schleiferi* are rare in the literature. In the present study, a case of a 63-year-old patient with an episode of refractory low back pain and fever is described. The radiographic image showed changes in the bone marrow signal in the bodies of D11 and D12, characterized by hypointense signal on T1 and hyperintense signal on STIR, with contrast enhancement. After collecting blood cultures and draining the material, *Staphylococcus schleiferi* was identified by MALDI-TOF. The patient was treated satisfactorily with sulfamethoxazole-trimethoprim. This case shows the importance of an accurate etiological diagnosis and discusses the role of coagulase-positive *Staphylococcus* as a pathogen in an elderly male individual.

Introduction

Vertebral osteomyelitis is defined by inflammation, usually due to infection, of any of the extradural bony or soft tissue segments of the spine and is responsible for approximately 5% of annual cases of osteomyelitis [1,2]. It frequently occurs because of hematogenous dissemination and the main risk factors are male, advanced age, drug users, endocarditis, degenerative bone disease, previous neurosurgery, diabetes mellitus, corticosteroid therapy and immunosuppressive conditions [3]. The etiological agent varies according to age and underlying comorbidity. When comparing young adults with the elderly, the population over 60 years of age has a lower occurrence of infections caused *Staphylococcus* and higher prevalence of Gram-negative and enterococcus cases [4]. In this context, the present study aims to report a rare case of vertebral osteomyelitis in elderly caused by *Staphylococcus schleiferi*.

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Case Presentation

Man, 63 years old, with systemic arterial hypertension and glaucoma, history of low back pain that started in June 2023. At the time, he was medicated with analgesics and treated with cefuroxime for five days, suspected of having a urinary tract infection. After six days, the patient returns to the health unit with continued low back pain and the appearance of measured fever of 38.5°C. Admission exams showed leukocytosis, negative cultures, as well as bilateral perirenal densification on abdominal tomography and degenerative changes on magnetic resonance imaging of the lumbar spine. A new 5-day cycle of antibiotic therapy with amikacin was instituted, with good clinical and laboratory response.

In September 2023, the patient again seeks the emergency service reporting progression of low back pain and refractoriness to analgesic measures. He underwent a new MRI of the thoracolumbar spine, the report of which showed changes in the bone marrow signal of bodies of D11 and D12, characterized by a hypointense signal on T1 and hyperintense signal on STIR, with contrast enhancement, associated with a slight irregularity of the contours, with enhancement of the anterior portion of the D11-D12 disc, associated with edema and enhancement in the soft tissues adjacent to the anterior portions of the vertebral bodies (Figure 1).

Based on the hypothesis diagnostic of spondylodiscitis, blood cultures and bone fragments for culture were collected using interventional radiology. While waiting for the cultures to progress, an empiric antibiotic therapy regimen with sulfamethoxazole-trimethoprim and ciprofloxacin was initiated. The bone biopsy samples contained necrotic bone spicules, hypercellular medullary content and hemosiderin deposits. *Staphylococcus schleiferi* was isolated from blood and bone fragment cultures, as show in Figure 2.



Figure 1: Dorsal column resonance.

Resultados e Concentração Inibitória Mínima (C.I.M) em µg/mL

Antibiograma do Microrganismo: (*Staphylococcus schleiferi*)
(Material Informado - Esporodiluído Aeróbico)

Clindamicina	S	0,25
Eritromicina	S	<= 0,25
Gentamicina	R	
Levofloxacino	I	0,25
Oxacilina	S	
Trimetoprima/Sulfametoxazol	S	<= 10,00
Vancomicina	S	<= 0,50
D-Teste	Negativo	
Teicoplanina	S	1,00
Linezolid	S	<= 0,50

Figure 2: Antibiogram.

A transthoracic echocardiogram was negative for endocarditis. After 4 days of empirical antibiotic therapy, the regimen was adjusted, according to cultures, to Cefazolin 2 grams, intravenously every 8 h for another 5 days. The patient was discharged from the hospital with a prescription for sulfamethoxazole-trimethoprim 800/160 mg, oral, every 12 h and returned to the outpatient clinic for follow-up. The patient was treated for 6 months, with recovery from low back pain and no other changes on neurological examination.

Discussion

Vertebral osteomyelitis should be suspected in patients with new or worsening pain in the spine and or neck, especially with fever and or bloodstream infection or infective endocarditis. It should also suspect in patients with new neurological signs after a recent episode of bacteremia [5].

Back pain due to vertebral osteomyelitis may initially respond to rest and conservative measures, leading to the erroneous conclusion of trauma, muscle strain, or another noninfectious cause. However, early suspicion is important to the diagnosis is established based on the positive culture obtained by biopsy of the vertebra and or involved disc space and can be inferred in the context of clinical and radiographic findings typical of vertebral osteomyelitis and positive blood cultures with probable etiological agent. For situations in which there are no positive microbiological cultures or Gram stain and biopsy cannot be performed, the diagnosis can be inferred in the context of suggestive clinical and radiographic findings and persistently elevated inflammatory markers [6].

When faced with cases of infectious diseases doctors often tend to start antibiotic therapy before collecting cultures. In the present case, the initial approach with collection of bone fragments and blood cultures was important to establish the etiological agent through paired cultures. Reported cases of human infection by *S. schleiferi* are scarce in the literature. However, it has emerged as cause of vertebral osteomyelitis, meningitis, endocarditis, surgical wound infection,

and primary bloodstream infection [3]. The species is divided into two subspecies *S. schleiferi* subsp. *schleiferi* and *S. schleiferi* subsp. *coagulans*. The species *S. schleiferi* subsp. *Schleiferi* is more related to infection in humans [7].

Routinely, discitis is treated for a period of six weeks. A longer duration of eight weeks is indicated for patients with undrained paravertebral abscessed and or due to infection with resistant organisms. The literature states that, in the context of extensive bone destruction, longer regimens may be necessary and evaluated individually during clinical follow-up [6]. In the case of the patient in question, an extended 6-month therapy was chosen because he was still in pain ad refused to undergo a surgical approach.

Clinical specimens, both blood culture and bone fragments, were obtained in accordance with institutional protocols. According to these recommendations, at least two blood samples were collected from different venipuncture sites, with aspiration of 10 mL of blood per site, and inoculation in two flasks with culture medium for aerobic and anaerobic microorganisms. Blood samples were collected by the care team using aseptic technique. The detection of microorganism growth in the blood sample was performed using the act/ALERT automated system (bioMérieux, Marcy-l'Étoile, France). The identification of microorganisms and Antimicrobial Susceptibility Testing (TSA) were performed by the MALDI-TOF automated system. The TSA was interpreted according to the BrCast recommendations in force at the time.

The performance of identification systems varies in the identification of *S. schleiferi*. In an English study conducted by Delpont and colleagues, MALDI-TOF was able to identify 100% of *S. schleiferi*. This shows the reliability of the results obtained by the present case report [8].

Conclusion

Therefore, early diagnosis and treatment of vertebral osteomyelitis caused by *S. schleiferi* is a challenge in clinical practice. In the presence of refractory back pai in a patient with risk factors, the diagnosis must be considered. This case reports the importance of anamnesis, teamwork, and collection of cultures to define the etiological agent and better patient care.

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