A Rare Case of Septic Arthritis of Lumbar Facet Joint with Epidural Abscess, and Bacterial Meningitis Caused by Methicillin-Sensitive *Staphylococcus aureus*

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Abstract

Septic arthritis of the facet joint is an extremely rare condition, even more in young immunocompetent patients. There have been approximately only 40 cases of this entity reported worldwide. Here, the authors present a 16-year-old male patient with lower back pain, fever, and cephalgia. Blood cultures and cerebrospinal fluid analysis confirmed methicillin-sensitive *Staphylococcus aureus* infection, and magnetic resonance imaging showed septic arthritis of the lumbar left facet joint L3 and epidural abscess. Intravenous oxacillin was administered, and the patient improved. No other treatment was required.

Keywords
► septic arthritis
► facet joint
► epidural abscess
► meningitis
► *Staphylococcus aureus*

Introduction

First described in 1966, septic arthritis is an extremely rare entity.1 Nowadays, only 40 cases of pyogenic arthritis of the facet joint are reported worldwide.2 Most of the pyogenic infections of the spine come from hematogenous dissemination, and the direct dissemination to the paraspinal soft tissue occurs in the 20% of the cases.1

Case Report

We present a case of a 16-year-old male patient, who presented to the hospital with lower back pain of 1 month of apparition. The patient informed us that he could not make normal movements because of severe pain and that in the last days it was associated with headache and fever. His medical history shows he is being treated with folic acid, as he suffers from hereditary spherocytosis. There was no history of urinary incontinence, spinal trauma, or any other medical problem.

On clinical examination, we found a febrile and tachycardic patient, with nuchal rigidity, muscular strength lower limbs was 5/5, sensation and reflexes were normal, and Lasègue’s test was negative.

In the first paraclinical test, it was evidenced leukocytosis (23,720), with neutrophilia (84%), an elevated C-reactive protein (18), and a normal urinalysis. As the patient’s condition was getting worse, and by the clinical suspicion, we decided to take a blood culture and do a lumbar puncture. In the blood culture, we found methicillin-sensitive *Staphylococcus aureus*, and in the analysis of lumbar puncture, 2,160 leukocytes, 100% neutrophils, 153 mg/dL proteins, and 53 mg/dL.
of glucose, with methicillin-sensitive \( S. \) aureus growing in the culture of cerebrospinal fluid.

Magnetic resonance imaging (MRI) study of the lumbo-
sacral spine revealed in left L3 osteoarticular inflammatory
changes associated with epidural abscess (►Fig. 1 and 2).

The patient was treated with conservative management
with intravenous oxacillin, because he did not meet crite-
rria for surgery. His evolution was satisfactory with no other
additional treatment.

Discussion

Septic arthritis of the lumbar facet joint is an infrequent
condition. It has been reported in older patients and those
who are immune-compromised, but in the literature, cases
of young immune-competent patients can also be found.
Although the precise pathogenesis of the septic arthritis of
the lumbar facet joints is not clear, some risk factors such as
diabetes mellitus and extraspinal infections have been pro-
posed, and hematogenous spread is the leading cause.\(^3\) In
other reports, the authors show that it can be secondary to
vertebral body osteomyelitis, epidural abscess, paraspinal
abscess, and even be a complication of a steroid injection.\(^4\)

According to reported epidemiology, the most com-
mon organisms causing septic arthritis of the facet joints
by hematogenous spread are \( S. \) aureus (70% of the cases)
and \( Staphylococcus \) epidermidis.\(^2,5,6\) Other bacterial organ-
isms such as \( Streptococcus \) and gram-negative rods are also
reported.\(^7\) Inflammatory markers including C-reactive pro-
tein and erythrocyte sedimentation rate are consistently
raised, with white blood count raised in 50% of the cases and,
in the same percentage, positive blood cultures.\(^2,3,5,8\)

The physiopathology of the abscess can be explained
because the facet joint cavity is narrow, and the infection can
easily spread to the epidural space by rupture of the ventral
aspect of the joint capsule and the paravertebral muscles by
rupture of the posterior aspect of the joint capsule.\(^5\)

Diagnosis of this entity is difficult because it can behave
as a degenerative disc disease and spondylosis.\(^9\) MRI is the
elective imaging modality of choice; it is both sensitive
and specific within 2 days of infection, and when it is
contrasted with technetium 99, it has 100% sensitivity for
facet joint compromise.\(^8,10\) The radiologic features in MRI
of the spine are joint effusion, periarticular bone marrow
edema, and periarticular soft tissue edema with enhance-
ment.\(^9\) Diagnostic confirmation is said to be performed
through bone biopsy or culture of the bacteria. However,
many times, if the facet compromise is isolated, the pos-
sibility of a negative biopsy is high.\(^2\) According to the
articles reviewed, it is recommended that if blood cultures
are negative or if there is doubt in the diagnosis of septic
arthritis of the facet joint, a culture must be performed
through needle aspiration at the level of the facet under
fluoroscope or ultrasound.\(^7\)

Differentiating a vertebral osteomyelitis from a septic
facet joint arthritis is difficult by clinical and laboratory
tests, but MRI of the spine has facilitated this and its early
detection. It is recalled that changes in the intensities of
the MRI suggestive for edema and epidural abscess can
be detected in the first week. The use of scintigraphy
in this pathology is limited, because it is very sensitive
but not very specific for the diagnosis of pyogenic facet
joint arthritis.\(^5\)

Fig. 1 (A–C) Axial view lumbar magnetic resonance imaging. Changes in the left L3 facet joint intensities that suggest an inflammatory
process, with changes in the surrounding tissues.

Fig. 2 (A) Sagittal view of magnetic resonance imaging showing
an epidural abscess. (B) T2-weighted image, axial view. Nerve roots
clumped together, which suggests epidural abscess.

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The clinical indications reported in the literature of pyogenic arthritis of the facet joint includes pain in the region of the persistent spine that does not improve with rest and fever. Nearly 90% of cases report localized pain in the spine and 50% are associated with fever.²

The treatment of choice is conservative management with intravenous antibiotics. It is recommended for 2 weeks intravenously and then 4 weeks orally. In addition, it should be followed up with acute phase reactants and imaging.² Surgical or open arthroscopic drainage with debridement is only reserved for patients with refractoriness to previous antibiotic management or acute neurologic compromise.¹¹ Regarding the dissemination of bacterial pyogenic arthritis to the paravertebral muscles and epidural space, it often does not require surgical management. Only the patient’s antibiotic management can improve it.⁵¹²

Conflict of Interest
None.

References