Pyogenic arthritis of a lumbar facet joint, a rare cause of retroperitoneal abscess: a case report

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Abstract:

Introduction: Pyogenic arthritis in the spinal facet joint is rare, although the wide availability of magnetic resonance imaging (MRI) has increased the detection rate. Pyogenic arthritis of a lumbar facet joint is often combined with abscesses in the paraspinal muscles and epidural space. However, there is no report of pyogenic arthritis of a lumbar facet joint causing a retroperitoneal abscess. We report on a patient with pyogenic lumbar facet arthritis, which caused a huge retroperitoneal abscess.

Case Report: The patient was a 67-year-old woman with a 3-week history of fever and pain in her lower back, left lower abdomen, and left thigh. Blood tests revealed high levels of inflammatory markers. Computed tomography (CT) showed a huge retroperitoneal abscess, and MRI of the lumbosacral spine showed an abscess at the left L5/S facet joint, that had invaded into the paraspinal muscles, epidural space, and retroperitoneal space. We diagnosed pyogenic arthritis of a lumbar facet joint combined with abscesses in the paraspinal muscles, epidural space, and retroperitoneal space. CT-guided percutaneous drainage of the retroperitoneal abscess was performed, and the patient was treated with antibiotics. The bacterial strain cultured was Streptococcus pneumoniae. The patient recovered after 10 weeks of antibiotic treatment combined with additional CT-guided percutaneous drainage.

Conclusions: Pyogenic arthritis of a lumbar facet joint can cause a retroperitoneal abscess through the vertebral foramen as well as the more common abscesses in the paravertebral muscles and epidural space, and the finding of MRI is characteristic. The clinician should suspect of pyogenic arthritis of a lumbar facet joint in a patient presenting with retroperitoneal abscesses that are not secondary to diseases of kidney or gastrointestinal tract.

Keywords:
Infection, facet joint, lumbar, retroperitoneal abscess, epidural abscess

Introduction

Pyogenic arthritis in a spinal facet joint is rare compared with pyogenic spondylitis. Magnetic resonance imaging (MRI) shows that an abscess in a facet joint frequently invades into the paraspinal muscles and epidural space. Here, we report the first case of pyogenic arthritis of a lumbar facet joint that caused a huge retroperitoneal abscess combined with abscesses in the paraspinal muscles and epidural space.

Case Report

History and Examination

A 67-year-old woman was referred to a physician at our hospital with a 3-week history of fever and pain in her lower back, left lower abdomen, and left thigh. She had no underlying immunosuppressive diseases. Her temperature was 38.9°C, and other vital signs were normal. She could not walk because of severe pain. She had tenderness in her left lower abdomen, left lower back, and left buttock, and showed the positive psoas sign (pain on hip extension) on the left side. The white blood cell count was 16,000 cells/L and C-reactive protein concentration was elevated to 22.2
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Figure 1. Coronal view (a) and axial view at L5/S (b) of contrast-enhanced computed tomography (CT) showing abscesses in the retroperitoneal space, epidural space, and paravertebral muscles (arrows), with an osseous lesion at the left L5/S facet joint. Axial view at L5/S (c) on CT showing facet joint destruction, indicating that the facet joint was the focus of the infection.

mg/L. Contrast-enhanced computed tomography (CT) showed a huge retroperitoneal abscess that compressed the psoas muscle and abdominal organs (Fig. 1). We found a lytic change in the left L5/S facet joint (Fig. 1b, 1c). MRI of the lumbosacral spine showed an abscess at the left L5/S facet joint, that had invaded into the paraspinal muscles, epidural space, and retroperitoneal space (Fig. 2). We diagnosed pyogenic arthritis of a lumbar facet joint with concurrent epidural, paraspinal, and retroperitoneal abscesses.

**Treatment and Posttreatment Course**

CT-guided percutaneous drainage of the retroperitoneal abscess was performed. The patient was placed in the prone position and CT-guided needle puncture was performed under local anesthesia after selecting the entry point. A drain tube was placed after the abscess was aspirated and then was removed 7 days later. Because the patient’s muscle strength was maintained and bowel and bladder function was intact despite the abscess occupying the epidural space, we prescribed antibiotic treatment and bed rest for 3 weeks. We started the patient on an intravenous course of sulbactam-ampicillin (3 g every 8 hours) to cover enteric and anaerobic bacteria. The bacterial strain cultured was *Streptococcus pneumoniae*. Although the blood culture was negative, the antibiotic was changed from sulbactam-ampicillin to ampicillin (2 g every 8 hours). After the 2-week intravenous course of ampicillin, the patient received an intravenous course of ceftriaxone (2 g every 24 hours) for 2 weeks because of difficulty in securing peripheral vascular access. The second CT-guided percutaneous drainage was performed 2 weeks after the first because some degree of abscess was still detected on CT. The patient responded well to the antibiotic treatment, which comprised a 5-week intravenous course and oral levofloxacin for 5 weeks. The abscesses in the epidural space, retroperitoneal space, and paravertebral muscles had nearly disappeared at 3 months after treatment (Fig. 3). The patient recovered well and was symptom-free at the 1-year follow-up.

**Discussion**

Pyogenic arthritis in a spinal facet joint is rare compared with pyogenic spondylitis, although identification has increased with the wide availability of MRI. Pyogenic arthritis occurs most often in the lumbosacral area. Fever and severe pain that radiates into the flank or buttocks with marked muscle spasm form the main clinical presentation. *Staphylococcus aureus* is a common etiologic organism, followed by other *Streptococcus spp*. The most useful imaging technique is MRI because it detects both the focus of the infection and abscesses extending into the epidural space and/or paraspinal muscles, which is a frequent finding for pyogenic facet arthritis. CT is useful in delineating the extent of osseous lesions of the facet joints, although the CT image may appear normal early in the disease.

Because most reports of pyogenic arthritis of a facet joint comprise case reports or small case series, guidelines for the treatment remain to be clarified. A review with analysis of 32 cases showed that the fundamental treatment is antibiotic therapy for 6-8 weeks, bed rest for 3 weeks, and immobili-
Figure 2. Sagittal view (left) and axial view at L5/S of T2-weighted magnetic resonance imaging (MRI) showing that the focus was at the left L5/S facet joint and that the spinal canal was occupied by the abscess (arrows).

Figure 3. Sagittal view (a) and axial view at L5/S (b) of T2-weighed MRI and axial view at L5/S of CT (c) 3 months after the start of treatment. The abscesses in the epidural space and retroperitoneal space had nearly disappeared.
zation with orthosis, and that surgical intervention is indicated for patients with severe neurological dysfunction.\(^3\)

Retroperitoneal abscesses are observed frequently and present as nonspecific, nonlocalizing symptoms. As a result, the diagnosis is often delayed. The diagnosis is usually based on imaging, mainly ultrasonography and CT.\(^7,8\) Reported symptoms included fever, lumbar or abdominal pain, chills, and anorexia. In most cases, retroperitoneal abscesses are secondary to diseases of the kidneys, such as pyelonephritis and renal abscess, and of the gastrointestinal tract, such as diverticulitis, appendicitis, and pancreatitis.\(^7,9\) Although it has been reported that sacroiliitis can cause retroperitoneal abscess,\(^7\) there are no reports of retroperitoneal abscess secondary to pyogenic lumbar facet joint arthritis.

We recommend treating patients with pyogenic arthritis of a lumbar facet joint with a retroperitoneal abscess according to the treatment for pyogenic arthritis reported by Narvaez et al.\(^3\) An intravenous course of antibiotics for 4 weeks, followed by oral therapy, can be initially introduced, and percutaneous CT-guided drainage of the infected joint, paravertebral muscle, and/or retroperitoneal space should be performed to obtain a specimen for culture and to reduce the size of the abscess. Bed rest for 3 weeks and immobilization with orthosis are also necessary. Surgical drainage is indicated in cases involving severe neurological dysfunction or when the infection is difficult to treat with conservative therapy alone.

Our case study shows that abscesses produced by pyogenic arthritis of a lumbar facet joint can extend not only to the epidural space and paravertebral muscles but also to the retroperitoneal space via a vertebral foramen. This case emphasizes the need for a high index of suspicion of pyogenic arthritis of a lumbar facet joint when a patient presents with a retroperitoneal abscess not associated with disease of the kidney or gastrointestinal tract, because early and correct diagnosis is necessary for developing a proper treatment plan, in particular for determining the duration of antibiotic therapy and bed rest, and the timing of surgical intervention if needed.

Conflicts of Interest: The authors declare that there are no conflicts of interest.

References