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A Rare Case of Completely Calcified Lumber Juxta-facet Cyst: A Case Report

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Learning Point of the Article:

JFCs should be considered in the differential diagnosis of calcified extradural lesions.

Abstract

Introduction: Juxta-facet cysts (JFCs) are extradural lesions. Calcification of cyst walls is often reported, although completely calcified facet cysts are extremely rare.

Case Presentation: A 65-year-old man presented with a 1-year history of the right lower extremity weakness and pain, and chronic low back pain. Imaging showed hypointensity on T1- and T2-weighted magnetic resonance images which can be very well appreciated on a completely calcified computed tomography mass arising from the right L3/4 facet joint. The patient underwent a total cyst removal with a facetectomy of the right L3/4 facet, and L3 to L4 posterior fusion.

Conclusion: We presented a case of a completely calcified JFC in a patient with back pain and radiculopathy who underwent cystectomy and spinal fusion. JFCs should be considered in the differential diagnosis of calcified extradural lesions.

Keywords: Juxta-facet cysts, calcified, case report.

Introduction

Juxta-facet cysts (JFCs) are extradural lesions from the facet joints or that have grown into the ligament flavum, which was initially used by Kao to describe both synovial and ganglion cysts [1]. The pathogenesis remains unclear, but most authors suggest that it may develop due to excessive joint mobility with degenerative spondylosis and/or spondylolisthesis [2, 3, 4]. This excessive joint mobility results in weakening of the joint capsule and synovial fluid herniation [5]. These patients can be asymptomatic or may present with back pain or radiculopathy. Characteristic magnetic resonance imaging (MRI) of facet cysts shows hypointensity on T1-weighted images and hyperintensity on T2-weighted images. However, in this case, hypointensity was observed on T1- and T2-weighted images, which can be very well appreciated on computed tomography (CT). Calcification of cyst walls is often reported, although completely calcified facet cysts are extremely rare. To the best of our knowledge, only two cases of completely calcified JFCs have been reported previously in the English-language literature [6, 7]. Here, we present a case of a completely calcified JFC in a patient with back pain and radiculopathy who underwent cystectomy and spinal fusion.

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Author's Photo Gallery


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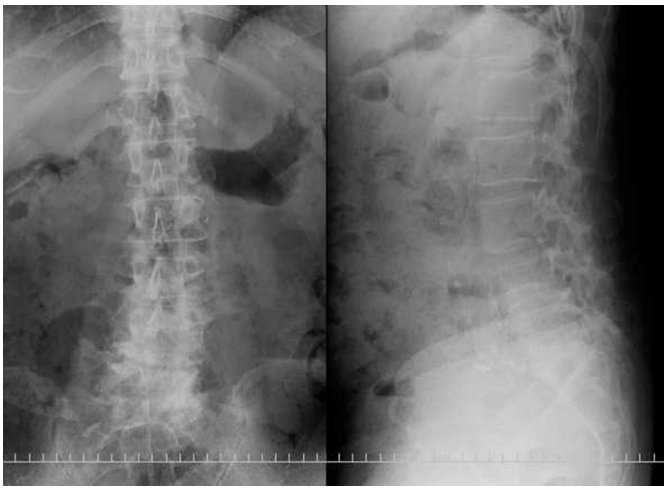

Figure 1: Pre-operative lumber lateral X-ray images (a. neutral frontal view, b. neutral lateral view, c. backward bending lateral view, and d. forward bending lateral view). The images showed a decrease in the intervertebral space of L4/5 and L5/S. On the other side, in the intervertebral space of L3/4, maintaining the intervertebral disc heights, and instability was unclear.

Case Report

History

The patient was a 65-year-old man who presented with a 1-year history of the right lower extremity weakness and pain, and chronic low back pain. Three months before admission to our hospital, the right lower extremity weakness worsened. He had a gait disorder at the time of presentation due to pain in the right lateral thigh and right lower extremity weakness. The patient had no significant medical history and did not take medications.

Physical examination

The femoral nerve stretching test was positive on his right leg. Both lower extremity tendon reflexes were intact; however, weakness in the right lower extremities (iliopsoas muscle MMT4 and quadriceps femoris MMT4) was observed. Hyposensation (fine touch 7/10) was observed in the right lateral thigh. The Japanese Orthopedic Association score was 13 points (3–4–6–0).

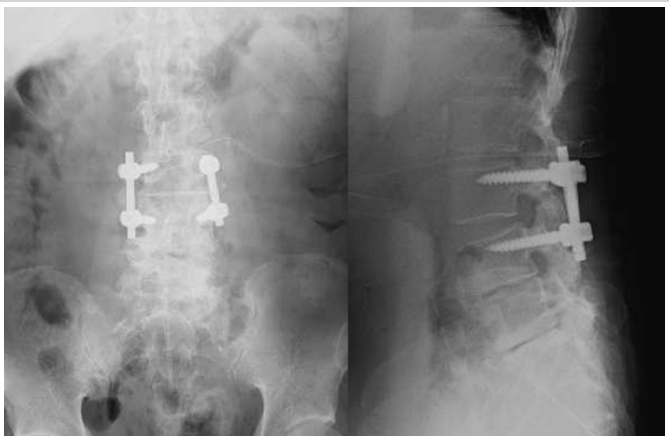

Figure 3: Post-operative lumber lateral X-ray images. L3–4 posterior fixation was performed.

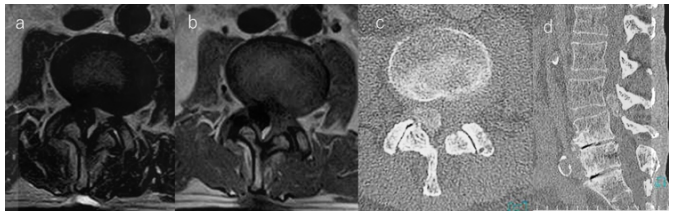

Figure 2: Magnetic resonance imaging (MRI) and computed tomography (CT) images of the lumber spine. MRI of the lumbar spine revealed a rounded lesion (size, 10 mm× 12 mm×10 mm) from the right L3/4 facet joint that appeared hypointense on T2- and T1-weighted imaging (a and b). The lesion was occupied from the right side of the spinal canal to the right intervertebral foramen of L3/4, and exclusion of L3 and L4 nerve roots was observed. According to the CT images, the lesion was well delineated to be completely calcified (c and d).

Imaging studies

X-ray images showed a decrease in the intervertebral space of L4/5 and L5/S. On the other side, in the intervertebral space of L3/4, maintaining the intervertebral disc heights, and instability was unclear (Fig. 1). MRI of the lumbar spine revealed a rounded lesion (size, 10 mm × 12 mm × 10 mm) from the right L3/4 facet joint that appeared hypointense on T1- and T2-weighted MRI (Fig. 2a and b). The lesion occupied the right side of the spinal canal to the right intervertebral foramen of L3/4, and exclusion of L3 and L4 nerve roots was observed. By CT imaging, the lesion was well delineated to be completely calcified (Fig. 2c and d).

Post-hospitalization course

The patient's most remarkable symptom was pain in the right lateral thigh and weakness of the right lower extremity, and we diagnosed radiculopathy due to a calcified JFC. The patient underwent total cyst removal with facetectomy of the right L3/4 facet, and L3 to L4 posterior fusion (Fig. 3). Facetectomy was essential for reliable decompression of nerve roots. The cyst wall was fragile and adhered to the surrounding tissue and easily teared, making it difficult to remove as a mass. Finally, the cyst was resected completely, and the cyst contents and wall were submitted as pathological specimens. Intraoperatively, the lesion was compressing the thecal sac and noted to consist of a paste like material that was not ossification.

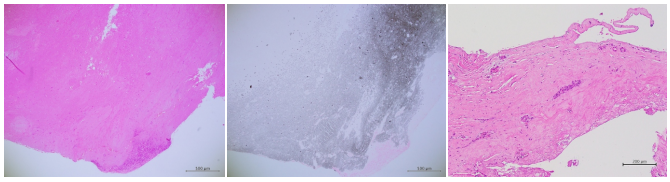

Figure 4: Pathological images. (a) The contents of the cyst (H&E, ×400). Bleeding, fibrin clots, and tissue with myxomatous degeneration were observed. (b) The contents of the cyst (von Kossa stains, ×400). Acidic exudate with uniform fine granular calcification. (c) The cyst wall (H&E, ×400). It was a fibrotic connective tissue with the formation of granulation tissue. Using a microscope (BX51, Olympus, Tokyo, Japan) and an objective lens of ×20, the image was taken under the settings of 1280 × 960 pixels (Camera, DS-F1, Nikon, Tokyo, Japan; Detector, Digital Sight DS-L2, Nikon, Tokyo, Japan).

Post-operative course

On the 1st day after the operation, rehabilitation started with a hard lumbar corset. The post-operative hospital course was unremarkable. The right lateral thigh pain was improved, and weakness gradually recovered. Twelve days after surgery, the patient was discharged.

A pathological image (H&E, × 400) was provided and showed bleeding, fibrin clots, and tissue with myxomatous degeneration as the contents (Fig. 4a). In addition to von Kossa staining, it provided acidic exudate with uniform fine granular calcification (Fig. 4b). The cyst wall was fibrotic connective tissue with the formation of granulation tissue (Fig. 4c). Histologic analysis identified that the lesion was a simple pseudocyst, containing calcified material.

Discussion

JFCs are extradural lesions from the facet joints or have grown into the ligament flavum, which was initially used by Kao [1] to describe both synovial and ganglion cysts. The pathogenesis remains unclear, but some reports have suggested that the pathogenesis of lumbar JFCs involves facet degeneration caused by various factors that lead to a weakening of the joint capsule [2, 3, 4]. This weakening allows herniation of the synovium, and synovial fluid fills the newly formed cavity and becomes a cyst, which communicates with the associated joint [8, 9]. In this case, the mobility of the lower lumbar spine was reduced because of degeneration of the intervertebral discs of L4/5 and L5/S1. Therefore, mechanical stress was applied to the facet joints of L3/4 as the adjacent segment.

. Calcification of cyst walls is often reported, although completely calcified facet cysts are extremely rare. Some differential diagnoses are considered calcified spinal extradural lesions, such as synovial osteochondromatosis [10], tumoral calcinosis [11], calcium pyrophosphate dehydrate crystal deposition disease [12], and lumbar presentation of ossification of the ligamentum flavum [13].

To the best of our knowledge, only two cases of completely calcified JFCs have been reported previously in the English-language literature [6, 7]. In both cases, facetectomy and posterior fusion were performed due to the size and mineralization of the lesion and showed good results.

Surgical treatment options for JFCs are simple laminotomy with cystectomy and spinal fusion if needed [14, 15]. Tubular surgery has also been described as minimally invasive spinal surgery [16]. However, calcified JFCs have a risk of calcified dural membranes and there is a possible difficulty in cystectomy due to adhesion. It is necessary to prepare for facetectomy and spinal fusion. In our case, it was believed that a facetectomy was necessary for reliable decompression of nerve roots; therefore, we performed a facetectomy of the right L3/4 facet, and L3 to L4 posterior fusion. The dural membrane and the cyst capsule were adhered and required careful peeling and facet joint resection was required for total cyst resection.

Conclusion

Here, we report a case of a completely calcified JFC in a patient who underwent cystectomy and spinal fusion. There was no recurrence of low back pain or leg pain in the post-operative course, and no recurrence of JFCs was observed on the images.

Clinical Message

JFCs should be considered in the differential diagnosis of calcified extradural lesions.

Declaration of patient consent : The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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