CASE REPORT

Facet arthrography in an unusual presentation of a lumbar hemorrhagic synovial cyst

Katsuhiro Tofuku,1 Hiroaki Koga,2 Setsuro Komiya1

ABSTRACT

An 84-year-old man experienced right buttock pain that radiated gradually to his right lower extremity over a few months before admission. MRI revealed a space occupying intraspinal lesion that was close to the right-sided L4–L5 facet joint and an extraspinal lesion posterior to the right-sided L5 lamina. The lesions appeared as hyperintense areas on T1 weighted images and heterogeneous areas on T2 weighted images. Facet arthrography under CT guidance revealed peripheral infiltration of the contrast medium only in the intraspinal lesion at early stages; subsequently, the contrast medium diffused into the extraspinal lesion, establishing a continuity of the right L4–L5 facet joint with both lesions, which were connected through the interlaminar space. A connection between the intraspinal and extraspinal lesions at the right-sided interlaminar space at the L4–L5 level was clearly noted during intraoperative examination. Histological examination revealed a hemorrhagic synovial cyst.

Synovial cysts of the lumbar spine are now widely recognized in advanced imaging studies. In general, lumbar synovial cysts can be easily diagnosed on MRI and CT scans because of their typical location and characteristic morphological features. However, hemorrhage into synovial cysts occurs much less frequently. To our knowledge, there are no previous reports on lumbar hemorrhagic synovial cyst with an intraspinal lesion that extended into the extraspinal paravertebral tissue through the interlaminar space. We present an extremely rare case of lumbar hemorrhagic synovial cyst with an unusual presentation in which an intraspinal lesion extended into the extraspinal paravertebral tissue through the interlaminar space. It was preoperatively diagnosed by facet arthrography under CT guidance.

CASE REPORT

An 84-year-old man experienced right buttock pain that radiated gradually to his right lower extremity over a few months before admission. He had no history of trauma, excess of activity or anticoagulation treatment. Physical examination revealed muscle weakness in the right tibialis anterior and extensor hallucis longus (grade 4/5, as determined by manual muscle testing), hypesthesia in the L5 distribution of the right lower extremity and urinary disturbance. The results of the straight leg raising test and femoral nerve stretch test were both negative.

Radiography showed degenerative changes in the L4–L5 facet joint. MRI scans revealed a space occupying intraspinal lesion that was close to the right-sided L4–L5 facet joint and an extraspinal lesion posterior to the right-sided L5 lamina, which appeared as hyperintense areas on T1 weighted images and heterogeneous areas on T2 weighted images (figure 1). CT myelography showed an extradural lesion that was adjacent to the right L4–L5 facet joint and medial displacement of the dural sac. L4–L5 facet arthrography was performed on the right side through a posterior approach with the patient in the prone position under CT guidance. CT facet arthrography revealed peripheral infiltration of the contrast medium only in the intraspinal lesion at the early stages; subsequently, the contrast medium diffused into the extraspinal lesion, resulting in continuity of the right L4–L5 facet joint with both lesions, which were connected through the interlaminar space (figure 2).

The patient underwent resection of the intraspinal and extraspinal lesions with laminectomy of L4 and L5. The cyst was found to contain both partially fresh and coagulated hematoma. A connection between the intraspinal and extraspinal lesions at the right-sided interlaminar space at the L4–L5 level was clearly noted during intraoperative examination. Histological examination revealed dense fibrous tissue with inflammatory cells and hemosiderin deposition. Neoangiogenesis was also observed. Synovial lining cells were not observed but synovial-like tissue was found, and this was consistent with the findings of synovial cysts. After surgery, the neurological symptoms improved and the patient could walk without support 1 week after surgery (figure 3).

DISCUSSION

Although the cause of hemorrhage into a juxtafacet cyst is still unclear, it is believed that trauma might most probably be the cause of the hemorrhage.1 Anticoagulation therapy2 3 and neoangiogenesis in the cyst wall4 5 have also been suggested as the causes of hemorrhage. The nature of the newly formed vessels justifies their fragility and consequent tendency to rupture.4 Xu et al6 reported in their review of the literature that 20 out of 29 patients with hemorrhagic juxtafacet cysts had neither a history of trauma nor coagulopathy, and they suggested that repeated microtrauma may also increase the risk of hemorrhage into the intraspinal synovial cysts. Similarly, our patient did not have a history of trauma or anticoagulation therapy. In our case, pathological examination showed neoangiogenesis; however, it is also possible that neoangiogenesis might have been a physiological response caused by bleeding into a juxtafacet cyst. We believe that gradual hemorrhage into a juxtafacet cyst can
occur even in the presence of severe degenerative changes of the facet joints with the potential risk of micromovement, leading to gradual bleeding from the severely degenerative facet joint.

Synovial cysts are generally assumed to be slow growing and the associated symptoms to only gradually increase over time. Some authors reported that an acute onset of symptoms associated with a synovial cyst tends to be associated with acute expansion of a cyst by hemorrhage. However, we believe that gradual enlargement of a cyst by gradual hemorrhage into the cyst might have occurred in our case because of the absence of an acute onset or exacerbation of symptoms and atypical morphological feature—that is, an intraspinal lesion that extended into the extraspinal paravertebral tissue through the interlaminar space.

The differential diagnosis of a juxtafacet cyst includes herniated disc fragment, schwannoma, neurofibroma, meningioma, metastatic lesions, perineural cyst, arachnoid cyst and pigmented villonodular synovitis. Juxtafacet cysts should be considered in the differential diagnosis of space occupying lesions around the spine. It is sometimes difficult to accurately differentiate synovial cysts from other extradural lesions only on the basis of the characteristic findings on MRI or CT scans. In situations where it is difficult to confirm the diagnosis, facet arthrography can be useful for identifying a direct communication of the facet joint with the lesion, which indicates the presence of synovial cysts. Only peripheral infiltration of the contrast medium into the cyst has been observed because CT facet arthrography revealed that the hematoma was located centrally within the hemorrhagic synovial cyst in our case.

**CONCLUSION**

We presented an extremely rare case of a hemorrhagic lumbar synovial cyst with an intraspinal lesion which extended into the extraspinal paravertebral tissue through the interlaminar space and which was preoperatively diagnosed by facet arthrography.

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Figure 1  MR images showing intraspinal and extraspinal space occupying lesions (arrows) at the L4—L5 level. (A) Sagittal T1 weighted images. (B) Sagittal T2 weighted images. (C) Axial T1 weighted images. (D) Axial T2 weighted images.
Figure 2  CT facet arthrography scans revealing peripheral infiltration of the contrast medium into the intraspinal and extraspinal lesions (arrows). Contrast medium infusion into the central part of the cyst has not been observed because the hematoma is located centrally within the hemorrhagic synovial cyst. (A) Axial view at the level of the lower edge of the L4 vertebral body. (B) Axial view at the level of the upper edge of the L5 vertebral body.

Figure 3  Postoperative MR images showing complete removal of the intraspinal and extraspinal space occupying lesions. (A) Sagittal T1 weighted images. (B) Sagittal T2 weighted images. (C) Axial T1 weighted images. (D) Axial T2 weighted images.
under CT guidance. Synovial cysts with unusual presentations are often difficult to distinguish from other extradural lesions preoperatively. Therefore, facet arthrography can be useful for identifying a direct communication of the facet joint with the lesion, which indicates the presence of synovial cysts.

Competing interests None.

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REFERENCES

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