Acute Bilateral Foot Drop as Presenting Symptom of Hemorrhagic Synovial Cyst of Lumbar Spine

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Key words
- Bilateral foot drop
- Hemorrhagic lumbar synovial cyst
- Surgery

Abbreviations and Acronyms
WI: Weighted imaging

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BACKGROUND: **Acute bilateral foot drop is a rare clinical presentation.**

CASE DESCRIPTION: **A 77-year-old male presented with acute bilateral weakness of the foot and ankle dorsiflexion. Magnetic resonance imaging of the lumbar spine revealed ligamentum flavum hypertrophy, as well as a mass lesion that appeared hyperintense on T1-weighted images and hypointense on T2-weighted images. Emergent decompressive laminectomy and hemorrhagic synovial cyst excision were performed. Histopathologic examination of the tissue revealed a synovial cyst with hemorrhage.**

CONCLUSION: **Here, we describe a unique case of a hemorrhagic synovial cyst with a presenting symptom of acute bilateral foot drop.**

BACKGROUND

Intraspinal synovial cysts occur due to the enlargement of the synovial sheath caused by degenerative vertebral disease, particularly at the lumbar region, where motion and loading are increased.[1,2] They are termed *juxtafacet cysts*, along with ganglion cysts. Mostly, lumbar synovial cysts present with intermittent low back pain, radiculopathy, and neurogenic claudication. The hemorrhagic form is rare and mostly involves severe compression of the neural structures, presenting as acute neurologic deficits.[1] The hemorrhagic nature is attributed to neoangiogenesis and the release of angiogenic factors due to a chronic inflammatory process.[1]

Acute-onset bilateral foot drop is rarely seen, and that caused by a hemorrhagic synovial cyst is unique; progressive bilateral foot drop may occur due to metabolic causes, parasagittal intracranial pathologies, and disk herniation.[3] Here, we present a case of a lumbar hemorrhagic synovial cyst with a presenting symptom of acute bilateral foot drop.

CASE DESCRIPTION

A 77-year-old man suffering from low back pain for 2 months presented with acute-onset bilateral foot drop. On physical examination, both foot ankle dorsiflexion and toe extension were scored 0/5. Hypoesthesia of L4 and L5 dermatomes was present. Perianal sensation, bladder function, and deep tendon reflexes were normal. No upper motor neuron signs were present, and all other neurologic findings were normal. The patient had no relevant medical history or any biochemical and hematological abnormality. Trauma and anticoagulant use were reported. Magnetic resonance imaging of the lumbar spine revealed significant dural compression due to a mass lesion at L3-L4, which appeared hyperintense on T1-weighted imaging (WI) and hypointense on T2WI (Figure 1). The presumptive diagnosis was a synovial cyst.

The patient underwent emergency L3 total laminectomy, and a large synovial cyst with a hemorrhagic component was microsurgically excised. Histopathologic examination of the tissue revealed a synovial cyst with hemorrhagic foci (Figure 2). Postoperatively, his foot drop progressively improved, and neurologic examination performed at the first postoperative month was completely normal.

CONCLUSIONS

Spinal synovial cysts are extradural soft tissue masses filled with clear or xanthochromic fluid and are connected to the facet joint capsule.[1] Spinal instability, microtrauma, facet joint arthrosis, and degenerative spondylolisthesis may cause intraspinal extradural synovial cysts.[2] Spinal synovial cysts are observed in the lumbar region, particularly at L4-L5.[1] Lumbar synovial cysts usually present with motor and sensory symptoms, intermittent low back pain, radicular symptoms, neurogenic claudication, and rarely cauda equina syndrome.[2] Hemorrhage into a synovial cyst may present as acute pain with radicular symptoms including neurologic deficits.[3] The hemorrhagic presentation can be related to anticoagulant treatment, trauma, disk herniation, vascular anomaly, and neoangiogenesis in the cyst.[2] The study of choice for diagnosis is magnetic resonance imaging. Synovial cysts with serous content appear isointense on T1WI and hyperintense on T2WI, and those with viscous content appear hyperintense on both T1WI and T2WI. If there is blood in the cyst content, more prominent hyperintensity is seen. The

Figure 1. Magnetic resonance imaging of the lumbar spine revealed an extradural mass lesion at the L3-L4 that was significantly compressing the dura. The lesion appeared hyperintense on T1-weighted sagittal images (**A**) and hypointense on T2-weighted sagittal (**B**) and axial images (**C**).

capsule wall can be thick, thin, or calcified. In contrast-enhanced T1WI, contrast enhancement is seen at the capsule wall.[4] Acute cysts have been described as appearing hypointense on T1WIand hyperintense on T2WI. However, in the subacute period, both the T1 and T2 signals may appear as hyperintense or hypointense, depending on the intracystic methemoglobin and hemosiderin content.[1]

Leg trauma; systemic diseases (diabetes mellitus, vasculitis, connective tissue disorders, and Crohn disease); compartment syndromes; muscular dystrophy; and leprosy are considered as differential diagnoses for foot drop.[5]

Although unilateral foot drop is a well-known symptom, bilateral foot drop is an unusual pathology that has been observed in intracranial pathologies, chronic inflammatory systemic diseases, and lumbar disk herniation.[5] George et al[6] reported on a patient who presented with back pain and gradual mobility deterioration, resulting in the occurrence of bilateral foot drop within 2 weeks. He had multiple spinal metastases from cecal carcinoma and a cyst in the spinal canal at L4-L5. They performed surgery and identified a hemorrhagic juxta-articular synovial cyst. Postoperatively, his ankle dorsiflexion improved to a power of 4/5.[6] In a literature review, Cannarsa et al[2] reported 44 cases of hemorrhagic lumbar synovial cyst with good or excellent surgical outcomes. To the best of our knowledge, this is the first case of a hemorrhagic synovial cyst with a presenting symptom of acute bilateral foot drop, which showed progressive improvement after surgical intervention.

In conclusion, hemorrhagic synovial cysts must be considered by neurologic surgeons in the differential diagnosis of acute bilateral foot drop. Emergency surgical intervention is mandatory for best neurologic outcomes.

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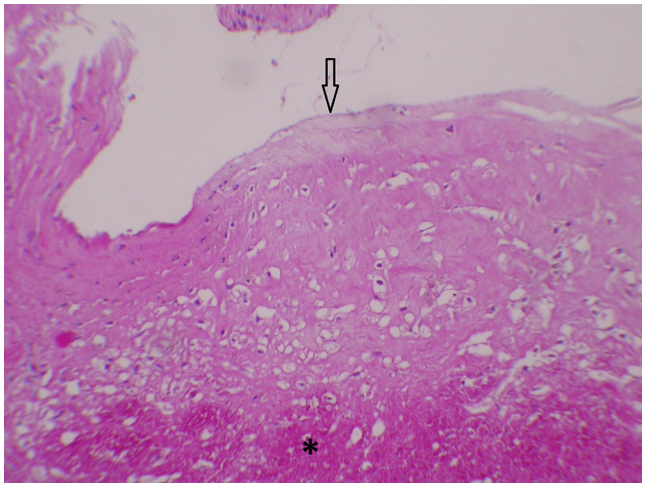

Figure 2. Histopathologic examination of the tissue revealed a synovial cyst wall (*arrow*) with hemorrhagic foci (*) (hematoxylin-eosin, ×100).

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