

Traumatic haemorrhagic lumbar synovial facet cyst presenting as bilateral foot drop: a case report

Caitlin Bodian, Jordan Davis, Alastair Hadlow

Lumbar synovial cysts are extradural lesions that arise from degenerative lumbar facet joints.^{1,2,7} They most commonly arise at the L4/5 level.² Patients are typically male and present between the 5th and 8th decades of life.¹ Cyst haemorrhage is rare, but is important to identify as it can cause abrupt volume expansion and nerve compression. Trauma is a well-recognised cause of haemorrhagic synovial cysts and typically produces unilateral neurological symptoms.⁶ To our knowledge we present the first case of a haemorrhagic facet joint cyst secondary to trauma causing acute bilateral foot drop.

Case report

A 77-year-old man normally well and independently mobile presented with a 12-day history of lumbar back pain and severe bilateral foot drop after a direct blow

from a shopping cart. At the time of injury he collapsed due to leg weakness. He had no previous spinal injuries or operations. He was on aspirin for ischaemic heart disease. On examination he was unable to walk independently. He had bilateral grade 4 hip abduction, grade 0 ankle eversion, grade 2 toe dorsiflexion and grade 3 ankle plantar flexion. Normal perianal sensation and sphincter function. MRI reported multilevel critical stenosis at L3/4 and L4/5 second to a diffuse annular bulge with facet joint hypertrophy and epidural fat compressing the thecal sac. (Figures 1 and 2) The patient underwent emergent posterior decompression of L3 to L5. Intraoperative findings demonstrated a large haemorrhagic cyst at the L4/5 facet joint compressing the cauda equina, which was confirmed by histology. Post-operatively the patient's neurological function improved immediately. At six-week follow-up he had a full neurological recovery.

Figure 1: Sagittal MR of the patient's lumbar spine. T2 on the left and T1 on the right.

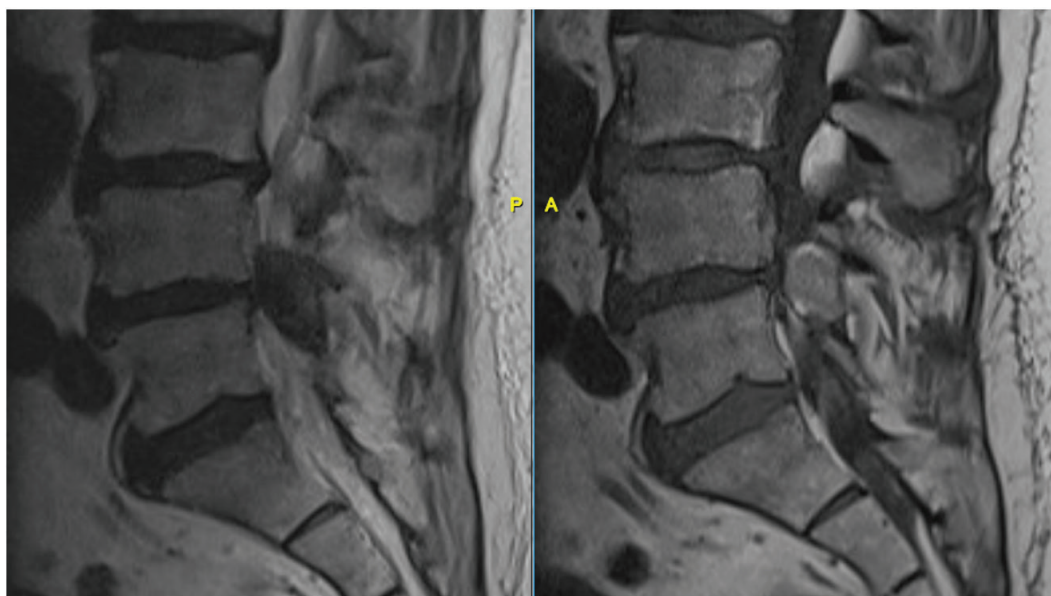
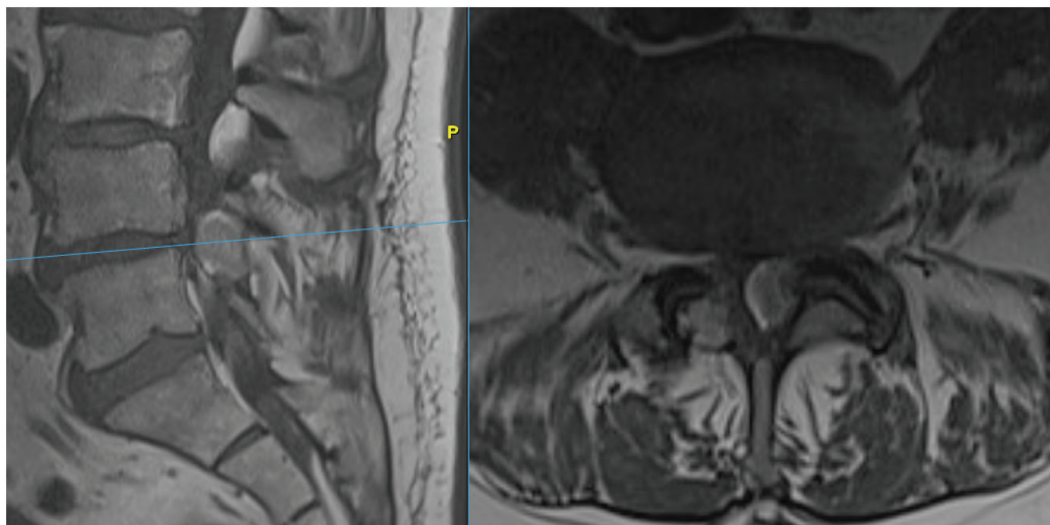


Figure 2: T1 sagittal and transverse images of haemorrhagic cyst at L4/5 spinal level.



Discussion

Trauma is an important cause of synovial cyst haemorrhage and is attributed to approximately one-quarter of the documented cases.^{2,3-5} Other risk factors include anticoagulation, underlying vascular abnormalities and co-existing disc herniation.¹ Bleeding occurs from the cyst's neoangiogenic vessels and leads to volume expansion within the spinal canal leading to neurological symptoms.^{2,6} These neurological findings have previously been reported as unilateral. The most common findings are paraesthesia and weakness.⁹ Gait disturbances and cauda equina are rare.^{8,9}

MRI is the preferred modality for diagnosis of cyst haemorrhage with 90% sensitivity.⁴ Appearance of cystic haemorrhage on MRI is variable as it depends of the acuity of bleeding. Acute haemorrhage will appear hyperintense on T1 and on T2, whereas subacute haemorrhage will be hyperintense on T1 and heterogeneous on T2 due to the presence of hemosiderin.⁴

Nearly all haemorrhagic cysts are treated with spinal decompression and cyst excision.¹ Emergent surgical intervention is often required due to intractable pain and acute neurological decline and produces

excellent results. Forty of the published cases detailed post-operative outcomes, in which 75% experienced complete resolution of symptoms and 25% experienced significantly improved symptoms.¹⁰ Our patient experienced a complete recovery of neurological function post-operatively.

The histology of synovial cysts demonstrates a viscid fluid filled sac with a lining of epithelium-like cuboid cells.⁴ Ganglion cysts are also found in the lumbar region and can haemorrhage in a similar manner requiring identical treatment. Diagnosis between synovial and ganglionic cysts can only be done through histopathological examination.¹⁰

Conclusion

Trauma is a well-established cause of haemorrhagic synovial lumbar cysts. They can cause significant lower limb neurology, which is almost always unilateral. We describe a patient who experienced a clear traumatic event to the lumbar spine which led to a symptomatic haemorrhagic facet joint cyst and acute bilateral foot drop. The treatment for nearly all cases is emergent surgical decompression and cyst resection and outcomes are highly favourable.

Competing interests:

Nil.

Author information:

Caitlin Bodian, Orthopaedic Registrar, Department of Orthopaedic Surgery, Auckland City Hospital, Auckland; Jordan Davis, Orthopaedic Registrar, Department of Orthopaedic Surgery, Auckland City Hospital, Auckland; Alastair Hadlow, Consultant Orthopaedic Surgeon, Department of Orthopaedic Surgery, Auckland City Hospital, Auckland.

Corresponding author:

Dr Caitlin Bodian, Department of Orthopaedic Surgery, Auckland City Hospital, 2 Park Road, Grafton.

caitlin.bodian@gmail.com

URL:

<http://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2018/vol-131-no-1478-13-july-2018/7623>

REFERENCES:

- Cicuendez M, Alen JF, Ramos A, Lobato RD, Lagares A. Spontaneous hemorrhage into a lumbar synovial cyst. *European Spine Journal*. 2010 Jul 1; 19(2):190–2.
- Xu R, Solakoglu C, Maleki Z, McGirt MJ, Gokaslan ZL, Bydon A. Hemorrhagic synovial cyst: the possible role of initial trauma and subsequent microtrauma in its pathogenesis: case report. *Neurosurgery*. 2011 Mar 1; 68(3):E858–65.
- Kaneko K, Inoue Y. Haemorrhagic lumbar synovial cyst: a cause of acute radiculopathy. *Bone & Joint Journal*. 2000 May 1; 82(4):583–4.
- Liu SS, Williams KD, Drayer BP, Spetzler RF, Sonntag VK. Synovial cysts of the lumbosacral spine: diagnosis by MR imaging. *AJR. American journal of roentgenology*. 1990 Jan; 154(1):163–6.
- Wang YY, McKelvie P, Trost N, Murphy MA. Trauma as a precipitant of haemorrhage in synovial cysts. *Journal of Clinical Neuroscience*. 2004 May 1; 11(4):436–9.
- Ramieri A, Domenicucci M, Seferi A, Paolini S, Petroz-za V, Delfini R. Lumbar hemorrhagic synovial cysts: diagnosis, pathogenesis, and treatment. Report of 3 cases. *Surgical neurology*. 2006 Apr 1; 65(4):385–90.
- Summers RM, Quint DJ. Case report 712: Hemorrhagic synovial cyst arising from right L2-L3 facet joint. *Skeletal Radiology*. 1992; 21:72–5.
- Howling S, Kessel D. Case report: acute radiculopathy due to a haemorrhagic lumbar synovial cyst. *Clinical Radiology*. 1997; 52:73–74.
- Tatter SB, Cosgrove GR. Hemorrhage into a lumbar synovial cyst causing an acute cauda equina syndrome: case report. *Journal of neurosurgery*. 1994 Sep; 81(3):449–52.
- Cannarsa G, Clark SW, Chalouhi N, Zanaty M, Heller J. Hemorrhagic lumbar synovial cyst: case report and literature review. *Nagoya journal of medical science*. 2015 Aug; 77(3):481.