

Acute Traumatic Myelopathy Secondary to a Thoracic Cyst in a Professional Football Player

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Study Design. Case report of acute traumatic myelopathy secondary to thoracic synovial cyst in a professional football player.

Objective. To emphasize examination for myelopathy and describe the radiographic and magnetic resonance findings of a rare source of traumatic myelopathy.

Background. Magnetic resonance imaging is the best initial evaluation for myelopathy in a traumatic setting. Heightened awareness during evaluation of a player involved in a traumatic incident allowed the diagnosis of potential cord damage and paralysis.

Methods. A subject with symptoms resulting from a direct blow to the back was evaluated for myelopathy, with diagnosis assisted by magnetic resonance imaging used to pinpoint the source of the disorder.

Results. The diagnosis allowed a surgical excision of the traumatic synovial cyst and full recovery of the injured football player.

Conclusions. Awareness during examination for myelopathy in an acutely injured athlete is imperative to prompt the clinician to order the proper diagnostic studies and thereby embark on a surgical correction of the problem. [Key words: myelopathy, spine, synovial cyst, thoracic] *Spine* 2000;25:1593–1595

■ Case Report

A 24-year-old professional football player, an offensive lineman with no prior history of back pain, surgery, or back injury, was struck in the midthoracic spine by the helmet of a teammate during practice. After he experienced approximately 3 days of sharp pain in the immediate area, the pain subsided; however, he then noted a tingling sensation in his lower extremities. When ambulating, unless he was walking slowly in a straight line and on a level surface, he also had problems of instability and poor coordination. Maintaining a stable, slow gait required his full attention.

Having had no improvement in his condition, the patient sought medical attention 3 weeks after the injury had occurred. He reported no bowel or bladder dysfunction. Physical examination showed decreased sensation from the sensory level above the xiphoid distally. Motor responses were intact. Deep tendon reflexes were equivalent and normoreflexic with negative Babinski sign. Plain radiographs of the cervical, thoracic, and lumbar spine were unremarkable, as were magnetic resonance (MR) scans of the cervical and lumbar spine. The MR scans of the thoracic spine showed a mass in the epidural space

to the right of the midline at T7 (Figures 1 and 2). Well circumscribed margins extended posteriorly to the midline and laterally to the right T7–T8 neural foramen.

The mass exhibited slight hyperintensity on T1 sequences and marked increase in signal in proton density on T2 sequences. There was displacement of the dural sac, and the spinal cord was displaced slightly to the left of the midline because of the presence of the mass. It measured approximately 2.5 cm cephalad to caudad, 2 cm anterior to posterior, and approximately 5 mm in thickness. There was no evidence of disc herniation.

The patient underwent a T7 laminectomy. After removal of the ligamentum flavum, a cystic lesion became evident, with hemosiderin staining on its inferior pole. The cyst extended to the neural foramen at T7–T8 on the right side. The mass was dissected from the dura and was subjected to pathologic assessment. Grossly, the specimen was reddish brown amorphous tissue. Microscopic inspection showed a multiloculated serous cyst with chronic inflammation, as well as hemosiderin-laden macrophages, scar tissue, and chronic inflammation.

Several weeks after the procedure, the patient noted the gradual return of normal sensation to the lower extremities. His gait instability resolved within the next several months, and he returned to professional football.

■ Discussion

Although rare, intraspinal extradural cysts in the cervical, thoracic, and lumbar spine have been reported. Cervical cysts producing myelopathy have been reported in patients with traumatic and atraumatic presentation^{6,14}; these cysts may also produce radicular symptoms.¹⁹ Most reports concern the lumbar spine, where most extradural spinal cysts are found,^{1,3–5,10,11,14,16,17,20} thoracic cysts being the least common of such lesions.¹⁸

The authors are aware of three previous patients with extradural synovial cysts occurring in the thoracic spine. The first, a 69-year-old woman, experienced the gradual, atraumatic onset of low back pain with weakness in her right lower extremity and numbness below her umbilicus. A cystic lesion was identified by MRI at the T7–T8 interspace.²

The second patient was a 51-year-old woman who experienced acute midthoracic pain after exertion from lifting; she had no neurologic abnormality, and the lesion was localized to the T4–T5 interspace.¹³ Both these patients had complete relief of symptoms after laminectomy, during which the ligamentum flavum and cyst material were excised.

The third patient was a 50-year-old woman with radicular pain in whom MRI showed a 1-cm extradural mass in the left posterolateral aspect of the thoracic spi-

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Figure 1. Thoracic synovial cyst. T2-weighted sagittal image (TR = 3000; TE = 21) of the thoracic spine shows a high-signal-intensity intraspinal mass with a low-signal-intensity rim.

nal canal, immediately adjacent to a degenerated left T9–T10 facet joint. The pain was eliminated by resection through a partial thoracic laminectomy, medial facetectomy, and foraminotomy at T9–T10.⁹

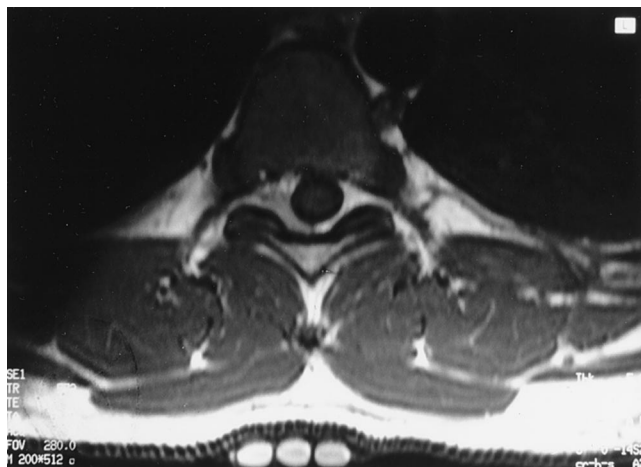


Figure 2. T1-weighted axial image (TR = 572, TE = 15) at T7–T8 shows an extradural mass displacing the thecal sac to the left.

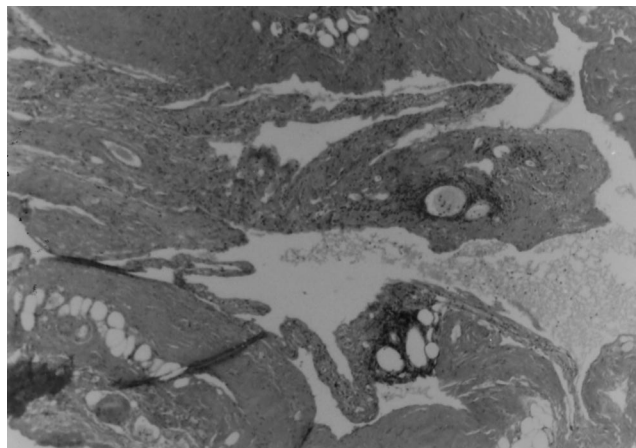


Figure 3. Multiloculated serous cyst containing chronic inflammation and hemosiderin-laden macrophages.

The present case represents, as far as is known, the fourth reported case of symptomatic thoracic synovial cyst, the first in which myelopathy was produced traumatically. Unlike patients in previously reported cases, this patient did not experience low back pain. In fact, after the initial pain of the blow had subsided, he experienced no thoracic pain whatsoever.

It has been thought that ganglion and synovial cysts develop through degenerative changes of the facet joint. Extrusion of synovium through capsular defects, myxoid degeneration, and cyst formation in collagen connective tissue; increased production of hyaluronic acid; and non-specific proliferation of mesenchymal cells are proposed mechanisms of cyst formation.^{3,9,12}

These cysts are generally assumed to be slow growing with symptoms gradually increasing in a period of months or years. That previously reported cysts,^{5,20} in addition to that in the current case, demonstrated evidence of prior hemorrhage indicates that acute bleeding into an existing cystic cavity could produce an acute onset of symptoms, as experienced by the current patient.

Although lumbar synovial cysts have been successfully treated with corticosteroid injection,^{4,17} excision can be expected to lead to resolution of radicular symptoms. In this more unusual instance of a thoracic cyst with myelopathy, excision led to complete neurologic recovery.

References

1. Abrahams JJ, Wood GW, Eames FA, Hicks RW. CT-guided needle aspiration biopsy of an intraspinal synovial cyst (ganglion): Case report and review of the literature. *AJNR Am J Neuroradiol* 1988;9:398–400.
2. Awwad EE, Martin DS, Bucholz RD, Sunderam M. Synovial cyst of the midthoracic spine. *AJNR Am J Neuroradiol* 1991;12:562–3.
3. Bhushan C, Hodges FJ, Wityk JJ. Synovial cyst (ganglion) of the lumbar spine simulating extradural mass. *Neuroradiology* 1979;18:263–8.
4. Bjorkengren AG, Kurz LT, Resnick D, Sartoris DJ, Garfin SR. Symptomatic intraspinal synovial cysts: opacification and treatment by percutaneous injection. *AJR Am J Roentgenol* 1987;149:105–7.
5. Brish A, Payan HM. Lumbar intraspinal extradural ganglion cyst. *J Neuro Neurosurg Psychiatry* 1972;35:771–5.
6. Cartwright MJ, Nehls DG, Carrion CA, Spetzler RF. Synovial cyst of a cervical facet joint: Case report. *Neurosurgery* 1985;16:850–2.

7. Eyster EF, Scott WR. Lumbar synovial cysts: Report of eleven cases. *Neurosurgery* 1989;24:112-5.
8. Fritz RC, Kaiser JA, White AH, DeLong WB, Gamburd RS. Magnetic resonance imaging of a thoracic intraspinal synovial cyst. *Spine* 1994;19:487-90.
9. Haase J. Extradural cyst of ligamentum flavum L4—a case. *Acta Orthop Scand* 1972;43:32-8.
10. Heary RF, Stellar S, Fobben ES. Preoperative diagnosis of an extradural cyst arising from a spinal facet joint: Case report. *Neurosurgery* 1992;30:415-8.
11. Hemminghytt S, Daniels DL, Williams AL, Haughton VM. Intraspinal synovial cysts: Natural history and diagnosis by CT. *Radiology* 1982;145:375-6.
12. Herington JL Jr, Edwards LW. Ganglion cysts arising in unusual locations. *Ann Surg* 1955;142:900-3.
13. Hodges SD, Fronczak S, Zimdrick MR, Lorenz MA, Vrbos LA. Extradural synovial thoracic cyst. *Spine* 1994;19:2471-73.
14. Jabre A, Shahbadian S, Keller JT. Synovial cyst of the cervical spine. *Neurosurgery* 1987;20:316-8.
15. Kjerulf TD, Terry DW Jr, Boubelik RJ. Lumbar synovial or ganglion cysts. *Neurosurgery* 1986;19:415-20.
16. Liu SS, Williams KD, Drayer BP, Spetzler RF, Sonntag VK. Synovial cysts of the lumbosacral spine: diagnosis by MR imaging. *AJNR Am J Neuroradiol* 1989;10:1239-42.
17. Mariette X, Glon Clerc D, Bennet P, Bisson M. Medical treatment of synovial cysts of the zygapophyseal joints: Four cases with long-term follow-up. *Arthritis Rheum* 1989;32:660-1.
18. Onofrio BM, Mih AD. Synovial cysts of the spine. *Neurosurgery* 1988;22:642-7.
19. Patel SC, Sanders WP. Synovial cyst of the cervical spine: Case report and review of the literature. *AJNR Am J Neuroradiol* 1988;9:602-3.
20. Pendleton B, Carl B, Pollay M. Spinal extradural benign synovial or ganglion cyst: case report and review of the literature. *Neurosurgery* 1983;13:322-6.

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