

Cervical Synovial Cyst: Case Report

Servikal Sinovial Kist: Olgu Sunumu

TAYFUN HAKAN, FÜGEN VARDAR AKER

Haydarpaşa Numune Hospital Departments of Neurosurgery (TH) and Pathology (FVA), Istanbul, Turkey

Received : 24.08.2000 ⇔ Accepted : 20.10.2000

Abstract: Objective: The cervical synovial cysts are unusual extradural lesions which may cause radiculopathy or spinal cord compression. The aim of this paper is to describe a case of cervical synovial cyst and discusses the clinical, radiological, and pathological features of these rare lesions.

Methods: A 55-year-old man presented with a history of progressive gait disturbance, and weakness and numbness of the lower extremities. Cervical magnetic resonance imaging revealed a spherical, extradural lesion adjacent to the C5-C6 facet joints. It did not enhance with contrast injection. The subarachnoid space had been obliterated and myelomalacia was noted. A laminectomy performed and identified an extradural cystic mass originating from a degenerated facet joint at C5-6. It was compressing the medulla at that level. The lesion was completely excised.

Result: Histological examination showed a fibrous wall with synovial lining. The postoperative period was uneventful and the patient's neurological status rapidly improved.

Conclusion: It is important to include synovial cysts in the differential diagnosis for any extradural spinal lesion because these cysts have significant implications for surgical treatment.

Key words: Cervical spine, facet joint, juxtafacet cyst, synovial cyst

Özet: Amaç: Servikal sinovial kistler radikülopati ya da spinal kord basısına yol açan ve az görülen ekstradural lezyonlardır. Çalışmada, bir servikal sinovial kist olgusu sunularak klinik, radyolojik ve patolojik özellikleri tartışılmaktadır.

Yöntemler: 55 yaşında bir erkek hasta, bacaklarında güçsüzlük, uyuşukluk ve ilerleyici yürüme bozukluğu yakınmaları ile başvurdu. Servikal manyetik rezonans görüntüleme tetkikinde C5-C6 faset eklemine komşu, yuvarlak ekstradural lezyon saptandı. Kontrast tutulumu olmayan kitlede, subaraknoid mesafe kapanmıştı ve myelomalazi izlenmekteydi. Laminektomi uygulanan hastada, C5-6 düzeyinde dejenere faset ekleminde kaynaklanan ekstradural kistik kitle bulundu. O seviyede medullaya bası etkisi bulunan lezyon total olarak eksize edildi.

Bulgular: Histolojik incelemesinde döeyici sinovial epiteli bulunan fibröz duvar görülmekteydi. Postoperatif dönemi olağan geçen hastanın nörolojik durumu hızla düzeldi.

Sonuç: Cerrahi tedavi açısından önemleri sebebiyle, sinovial kistler, ekstradural spinal lezyonların ayırıcı tanılarında yer almalıdırlar.

Anahtar kelimeler: Faset ekleme, juxtafacet kisti, servikal omurga sinovial kist

INTRODUCTION

Spinal synovial cysts are rare extradural lesions that originate from facet joints (1,4,19,21). Both synovial and ganglion cysts arise from these joints,

but the etiologies of these lesions are unknown. These two types of cysts are clinically indistinguishable from each other; thus, the term "juxtafacet cyst" is used to refer to both. Synovial and ganglion cysts have long been recognized as causes of radiculopathy

(10,17). True spinal synovial cysts have a synovial lining and communicate with the joint capsule (10,11,22). Trauma (3,6) and degenerative diseases (4,7) are thought to be the causes of these lesions. While most reported synovial cysts are located in the lumbar area (5,9,13,21), there are a few case reports of cervical cysts (1,3,15,20). Most of the synovial cysts described in the cervical spine have been located anteriorly (7,19) or posteriorly (23) at the atlantodental articulation, and a small number have been noted on the posterior aspect of the lower cervical spine (4).

This report describes a patient with a cervical synovial cyst. We discuss the clinical, radiological, and pathological findings in this case, and compare them to previously reported cases.

CASE REPORT

A 55-year-old man presented with a 7-month history of progressive gait disturbance, and weakness



Figure 1: T1-weighted MRI demonstrates a posterolateral extradural lesion at C5-C6 (arrow) with no contrast enhancement.

and numbness of the lower extremities. On neurological examination, the patient's deep tendon reflexes were exaggerated, and he showed positive Hoffmann's and Babinski's signs bilaterally, in addition to symmetrical ankle clonus. Motor power and muscle tone were normal, but we noted dermatomal sensory loss at C6 and C7. There were no bowel or bladder signs or symptoms.

Cervical magnetic resonance imaging (MRI) revealed a spherical, left posterolateral extradural lesion adjacent to the C5 and C6 facet joints. The lesion did not enhance with contrast injection. The images showed that the mass was compressing the thecal sac. It had obliterated the subarachnoid space, and myelomalacia was noted (Figure 1). We performed a laminectomy and identified an extradural cystic mass. The cyst originated from a degenerated facet joint at C5-6, and was compressing the medulla at that level. The lesion was completely excised.

Histological examination of the surgical specimen showed a fibrous wall with synovial lining (Figure 2). The postoperative period was uneventful and the patient's neurological status rapidly improved. By 4 months, he was able to walk unaided and showed marked improvement in his deep tendon reflexes.

DISCUSSION

Although synovial cysts are uncommon, these extradural mass lesions are known to cause neural compression. Most of these cysts arise in the lumbar spine, and occurrence in the thoracic and cervical regions is rare (23). To our knowledge, only 27 cases

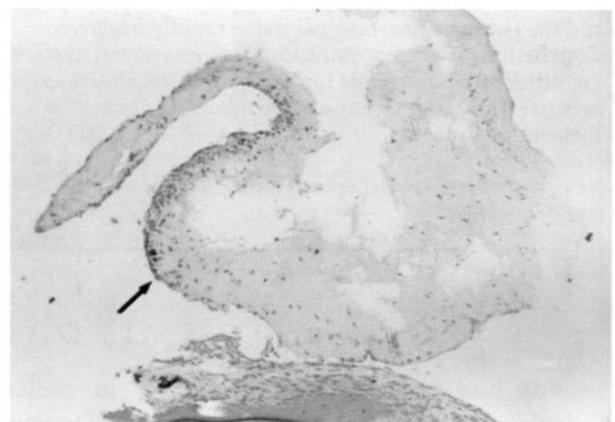


Figure 2: The cyst had a fibrous wall and synovial lining (arrow). (HE X40)

of synovial cyst in the cervical spine have been described in the literature (4,15) since Cartwright et al. reported the first case in 1985 (3).

There are many hypotheses regarding the pathogenesis of these lesions. The most widely accepted theory is extrusion of synovium from the joint capsule. Myxoid degeneration and cyst formation in connective tissue, increased motion of the spinal synovial joints, and developmental anomalies of the synovial tissue are other proposed mechanisms (4,5,9,12,16). Trauma (1,3,6) and degenerative changes (4,7,12) have also been associated with synovial cysts; however, our patient had no history of trauma and showed no evidence of spinal degeneration.

The clinical findings in patients with cervical synovial cysts depend on the lesion's size, location, and relationship to nearby neural structures. It is impossible to clinically distinguish the symptoms of synovial cyst from those of disc disease. Pain is the most common presenting symptom (1,13). Others include cervicomedullary compression with cysts of the atlantodental articulation in the upper cervical spine (7); radiculopathy or spinal cord compression with cysts in the lower cervical region (4); and sciatica (5,12,13) or neurogenic claudication (12) with cysts in the lumbar spine. Some synovial cysts have been associated with the clinical picture of cauda equina syndrome (12,22). Patients with these lesions may also present with acute symptoms caused by hemorrhage into the cyst cavity (8,22). The cause of this is not clearly understood, but the highly vascular nature of degenerated synovium and secretion of angiogenic factors by synovial cells are thought to play roles (2,22).

Introduction of the modern imaging methods of MRI and computerized tomography has allowed better definition of synovial cysts at all locations. They appear as well-defined, spherical, extradural lesions adjacent to degenerative facet joints (9,14,18). Synovial cysts are easily visualized on T2-weighted MR images, showing a homogeneous hyperintense core and dark capsule (23). In cases where there is hemorrhage into the cyst, T1-weighted images show a hypointense lesion due to the presence of hemosiderin, whereas non-hemorrhagic cysts are generally isointense (18,21,23).

Although various therapeutic alternatives have been described, including percutaneous injection, aspiration, and conservative management, the

definitive treatment for symptomatic synovial cyst is excision (23). Our patient's symptoms improved rapidly after his lesion was removed.

It is important to include synovial and ganglion cysts in the differential diagnosis for any extradural spinal lesion because these cysts have significant implications for surgical treatment. The clinical symptoms of synovial cysts are identical to those of intervertebral disc herniation, but the cysts tend to adhere to the dura, and it is crucial that dural and neural injuries be avoided during surgery (19).

Correspondence: Tayfun Hakan
Acıbadem Gömeç Sokak
Hamdibey Ap. No: 45/9
81020 Kadıköy, İstanbul, Turkey
Tel: 0.532.324 32 84
Fax: 0.216.363 93 33
E-mail: tayfunhakan@yahoo.com

REFERENCES

1. Artico M, Cervoni L, Carloia S, Stevanato G, Mastantuono M, Nucci F: Synovial cysts: Clinical and neuroradiological aspects. *Acta Neurochir (Wien)* 139: 176-181, 1997
2. Brown RA, Weiss JB, Tomlinson IW, Phillips P, Kumar S: Angiogenic factor from synovial fluid resembling that from tumours. *Lancet*: 682-685, 1980
3. Cartwright MJ, Nehls DG, Carrion CA, Spetzler RF: Synovial cyst of a cervical facet joint: *Neurosurgery* 16: 850-852, 1985
4. Cudlip S, Johnston F, Marsh H: Subaxial cervical synovial cyst presenting with myelopathy. *J Neurosurg (Spine 1)* 90: 141-144, 1999
5. Eyster EF, Scott WR: Lumbar synovial cysts: Report of eleven cases. *Neurosurgery* 24: 112-115, 1989
6. Franck JI, King RB, Petro GR, Kanzer MD: A posttraumatic lumbar spinal synovial cyst. *J Neurosurg* 66: 293-296, 1987
7. Fransen P, Pizzolato GP, Otten P, Reverdin A, Lagier R, Tribollet N: Synovial cyst and degeneration of the transverse ligament: An unusual cause of high cervical myelopathy. *J Neurosurg* 86:1027-1030, 1997
8. Jabre A, Shahbadian S, Keller JT: Synovial cyst of the cervical spine. *Neurosurgery* 20:316-318, 1987
9. Jackson DE, Atlas SW, Mani JR, Norman D: Intraspinial synovial cysts: MR imaging. *Radiology* 170:527-530, 1989
10. Kao CC, Uihlein A, Bickel WH, Soule EH: Lumbar intraspinal extradural ganglion cyst. *J Neurosurg* 29:168-172, 1968
11. Kao CC, Winkler SS, Turner JH: Synovial cyst of spinal facet. Case report. *J Neurosurg* 41:372-376, 1974
12. Kjerulf TD, Terry DW, Boubelik RJ: Lumbar synovial or ganglion cysts. *Neurosurgery* 19:415-420, 1986
13. Kuday C, Hancy M: Semptomatik intraspinal sinovial

- kist. Olgu sunumu ve literatürün gözden geçirilmesi. Türk Nöroşirürji Dergisi I:88-90, 1989
14. Liu SS, Williams KD, Drayer BP, Spetzler RF, Sonntag VKH: Synovial cyst of the lumbosacral spine: Diagnosis by MR imaging. AJR 154:163-166, 1990
 15. Lunardi P, Acqui M, Ricci G, Agrillo A, Ferrante L: Cervical synovial cysts: case report and review of the literature. Eur Spine J 8:232-237, 1999
 16. Maresca L, Meland NB, Maresca C, Field EM: Ganglion cyst of the spinal canal. J Neurosurg 57:140-142, 1982
 17. Moiel RH, Ehni G, Anderson S: Nodule of the ligamentum flavum as a cause of nerve root compression. J Neurosurg 456-458, 1967
 18. Munz M, Tampieri D, Robitaille Y, Bertrand G: Spinal synovial cyst: Case report using magnetic resonance imaging. Surg Neurol 34:431-434, 1990.
 19. Onofrio BM, Mih AD: Synovial cyst of the spine. Neurosurgery 22:642-647, 1988
 20. Patel SC, Sanders WP: Synovial cyst of the cervical spine: Report and review of the literature. AJNR 9:602-603, 1988
 21. Silbergleit R, Gebarski SS, Brunberg JA, McGillicuddy J, Blaivas M: Lumbar synovial cysts: Correlation of myelographic, CT, MR and pathologic findings. AJNR 11:777-779, 1990
 22. Tatter SB, Cosgrove GR: Hemorrhage into a lumbar synovial cyst causing an acute cauda equina syndrome. J Neurosurg 81:449-452, 1994
 23. Weymann CA, Capone P, Kinkel PR, Kinkel WR: Synovial cyst of the upper cervical spine: MRI with gadolinium. Neurology 43:2151-2152, 1993

J. Neurol Neurosurg Psychiatry 2001 Jan;70(1):74-7

Diagnosis and surgical management of intraspinal synovial cysts: report of 19 cases.

Trummer M, Flaschka G, Tillich M, Homann CN, Unger F, Eustacchio S.

Age and hypermobility may play a part in the aetiology of facet joint synovial cysts. As all operative strategies showed equally good clinical outcome, total excision via a small flavectomy as the least invasive approach should be considered therapy of choice in patients with cysts causing neurological deficits.