Bilateral mirror-like image of cervical synovial cyst in adults

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Abstract

Cervical synovial cysts (SC), however uncommon, can cause radiculopathy and myelopathy. In this study, we report a case of a cervical synovial cyst presented as myelopathy. A 48-year-old man presented with gait disturbance, decreased touch senses, and increased sensitivity to pain below C5 level. Magnetic resonance imaging revealed a 0.3-mm, bilateral mirror-like small cystic lesion in the spinal canal with cord compression at the C5-6 level. We performed a bilateral expansive laminoplasty of C5 using a posterior approach and completely removed the cystic mass. Histological examination of the resected mass revealed fibrous tissue fragments with amorphous materials and granulation tissue compatible with a synovial cyst. The patient's symptoms resolved within 3 months after surgery.

Although cervical SC is often associated with degenerative facet joints, clinicians must be aware that SC may lead to neurological deficits.

Keywords: *Cervical spine, Degenerative, Synovial cyst, Myelopathy*

Introduction

SC is a cyst associated with facet joints that contain synovial fluid. SC is often obtained in the lumbar spine, and very rarely in the cervical spine.^{1-3,10} Most SCs are acquired incidentally and can cause radiculopathy and myelopathy due to compression of a nerve root or the spinal cord. In general, symptomatic SC is sometimes associated with facet joint degeneration.¹⁻³

Recent pathogenesis of SC is still unclear, but several hypotheses have been reported, including it being the result of mechanical stress in the joints.^{3,7,10} According to this hypothesis, SC may be originated from an inflammatory process that forms fluid or protrusion of the synovial tissue through the joint capsule.⁴⁻⁶ Based on that background of international literature, we report this uncommon case of a bilateral mirror-like cervical synovial cyst.

Case Report

A 48-year-old man with a 5-year history of posterior neck pain VAS 7/10 was presented with progressive gait disturbance and paresthesia in his upper and lower limbs. On admission, the neurological evaluation revealed the weakness, motoric grade both arm 3/5 and leg 3/5 and the patient showed diminished touch sensation. On deep tendon reflex examination, the patient's biceps and triceps reflex were increased, right patellar tendon reflex was increased, and pathological reflex was positive.

We performed magnetic resonance imaging (MRI) of the cervical spine to accurately assess spinal cord lesion. Cervical MRI identified a 0.3 mm diameter extradural cystic lesion in the spinal canal with bilateral cord compression at C5-6 level (Figure 1). We performed a bilateral expansive laminoplasty (Figure 2B) using a posterior approach and completely removed the solid

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cystic mass (Figure 2A). Histological examination of the resected mass showing cyst wall lined by synovial cells consistent with a synovial cyst (Figure 2C). No neoplasm was identified. At his 3-monthly follow-up examination, the patient reported significant motoric recovery and no neck pain.

Fig 1. (A, B, C) T2-weighted sagittal, axial and coronal MRI of the cervical spine, showing a bilateral, circumscribed, high signal intraspinal but extradural mass arising from a facet joint (asterisk) indicates a synovial cyst.

Discussion

The history of SC cannot be predicted. Some patients may experience improvement in the symptoms, so surgery is not needed. For small-sized SC with minimal symptoms, careful and conservative treatment is needed. Surgery is performed when there is a worsening of symptoms or nerve deficits. Complete excision of SC is the primary choice of surgery and is expected to result in significant improvement, and according to some literature, in reduced recurrence rates.⁴ Common symptoms include neck pain, upper limb pain, and radiculopathy and myelopathy caused by pressure on the nerves and spinal cord.³ In some cases, the symptoms include brown-sequard syndrome, acute myelopathy, and spontaneous bleeding. As the symptoms are almost similar to space-occupying lesions, it may be difficult for clinicians to diagnose.³

Fig 2. (A) Intraoperative solid cystic mass. (B) Bilateral expansive laminoplasty. (C) Histopathology showing cyst wall lined by synovial cells (arrow) (HE 100×)

As SC may be associated with bleeding, inflammation and bone erosion, it can cause misdiagnosis with other pathological abnormalities, including tumors, infections, and joint inflammation.⁵

The cause of SC can include many factors although they have not been thoroughly detected.^{3,7} It may be originated from the degenerative process and in the erosion of facet joints to the facet wall,

triggered by hypermobility or trauma.^{3,8,9} The inflammatory process plays an important role in the formation of SC by regulation of angiopoietin-1, basic fibroblastic growth factor, substance P, platelet-derived growth factor, and interleukins in stressful locations that cause synovial hyperplasia and cyst formation. Additionally, SC at the cervicothoracic junction is a predilection for the formation of cysts because of the transition between the mobile and fixed segments.^{1,3,8,9}

Histologically, cysts in facet joints may be classified as “synovial cysts” or as “ganglion cysts,” which are also known as “pseudocysts.” Synovial cysts (true cysts) with capsule wall, clear liquid, and serosa, are directly associated with facet joints.^{5,6,10} Most cases show progressive myelopathy symptoms caused by non-trauma factors. In the case presented here, no acute

Formation of a synovial cyst or hematoma was found by microscopic examination, and no evidence of a fracture was reported.²

Conclusion

We reported a unique case of a bilateral mirror-like image of the cervical synovial cyst in young adults. Because of the rarity of this case, so few cases were reported. Surgical excision of cysts can improve symptoms and resolution of neurological disorders.

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