Spinal synovial cysts causing neurological deficit. Report of two distinct cases

Cistos sinoviais espinhais, causando déficit neurológico. Relato de dois casos distinto

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ABSTRACT

Synovial cysts of the spine are usually asymptomatic, rarely causing nerve root or spinal cord compression. The authors report on two cases of spinal synovial cysts. One patient harbored a cervical cyst causing myelopathy, and a second patient had a lumbar cyst with gradual development of radiculopathy. In both cases the patients had improvement of the symptoms and good outcome after surgical removal of the cysts. Synovial cysts should be considered in the differential diagnosis of any spinal extradural masses. The literature is reviewed and the etiological, clinical presentation, diagnosis and treatment are discussed.

Keywords: synovial cyst, myelopathy, radiculopathy, cervical spine

INTRODUCTION

The synovial cysts are most commonly involve the joints of the limbs, and are rarely found in the spinal canal. Their relative frequency in the spine is unknown, but they are most frequently found in the lumbar spine and extremely rare in the cervical and thoracic region. Several theories have been suggested to explain the pathogenesis of synovial cysts. Although most cases of these cysts are related to degenerative changes, its origin remains unclear. Intraspinal synovial cysts can serve as a cause of radiculopathy, myelopathy and low back pain, and are normally misdiagnosed. The authors describe a case of cervical C3-C4 synovial cyst presenting with myelopathy, and a case of L4-L5 cyst causing L5 radiculopathy, followed by a review of the relevant literature.

CASE 1

An 81 year-old man, previously independent and mobile, presented to the neurologic clinic with a 2-month history of gradually progressive gait disturbance, weakness and numbness in all limbs. Physical examination confirmed a spastic tetraparesis (3+/5) with a sensory level for pinprick sensation to C4 bilaterally, as well as an increased response to knee and ankle jerks. Deep tendon reflexes were hyperactive, and his plantar response was extensor bilaterally, more evident in the left. Episodes of urinary retention were described.
Cervical MRI with axial and sagittal views revealed marked spondylosis and an image of cystic aspect at the level of C3 to C4, hyposignal in the T1 and hypersignal in the T2-weighted sequence, causing severe compression of the spinal cord. A preoperative diagnosis of synovial cyst was made (Fig. 1).

A C3-C4 laminectomy was performed, and a gray-colored fibrocystic lesion originating from the left facet joint at C3-C4 was identified. The cyst was removed with microsurgical techniques and the dura was left intact. Histopathology study was consistent with synovial cyst, consisting primarily of myxoid material with interspersed fibroblast-like cells (Fig. 2).

Postoperatively, the neurological status of the patient improved rapidly. One month later, the patient was able to walk without support, with full power in his right arm and leg, with minimally reduced power in his left arm and left leg.

**Case 2**

A 79-year-old woman comes to the hospital with a 5 months-history of a gradually progressive pain and paresthesia in right lower limb. She had some difficulty in walking because of the pain, causing her to visit the emergency department several times over past 2 months. Pain persisted despite conservative treatment with analgesics.

Examination showed decreased power in the right foot inversion and in right extensor hallucis longus. Straight-leg raising beyond 20 reproduced the patient’s usual pain. Spine MRI showed a well-defined cystic mass posterolateral to the right lumbar L5 nerve root, adjacent to the facet and compressing the right L5 root (Fig 3).

She was initially managed by percutaneous CT-guided aspiration of the facet joint cyst, with temporary relief of symptoms. A L4-L5 right hemilaminectomy was then performed and the cyst located in continuity with the L4-L5 facet joint was completely removed. Pathologic examination showed a 9.0 mm cyst of fibrous connective tissue with synovial lining and focal inflammation (Fig. 4). After surgery, the patient had complete relief of symptoms.
Synovial cysts of the spine are uncommon, and asymptomatic in most of cases. They have no sexual predominance and occur more frequently in the fifth or sixth decades. Pathogenesis of the cysts is unclear and many theories have been proposed to explain their origin. Based on the fact that synovial cysts are contiguous with joints, some authors proposed that these lesions arise through a defect in the wall of the joint capsule, caused by an increased and abnormal motion in the involved segment, spondylosis and spondylolisthesis, degeneration and herniation of a joint capsule, spinal trauma and rheumatoid arthritis. Other theories include increased secretion by fibroblasts, presence of developmental rests, myxoid degeneration of connective tissue, displaced cell rests of synovia and neof ormation from articular tissue.

Kao et al. first introduced the term juxta-facet cysts to describe synovial and ganglion cysts of the facet joints of the spine. A cyst can be classified in synovial or ganglion by their common location, origin or pathological findings. Synovial cysts are most often in connection with the joint and found in the postero lateral aspect of the spinal canal. Ganglion cysts can be seen in the same location but occurring predominantly on the posterior aspect of the facet joint. Regardless of classifications, the clinical significance, treatment and prognosis are equal.

The relative frequency of the synovial cyst in the spine is unknown, however they are most frequently found in the lumbar spine and rarely in the cervical and thoracic spine. The most common affected levels are L4–L5, L5–S1 and the lower cervical spine, segments with great mobility and commonly affected by degenerative disease. These findings support the theory that excessive stress to the facet joint is important in cyst generation.

To the best of our knowledge, only 28 cases of cervical synovial cysts are described in the literature. Most of the upper cervical cysts are located in the C1–C2 facets or near the odontoid process, and most of the lower cervical cysts were located near C6–C7 facet joints, where there is increased motion at the synovial joint.

In Brazilian literature there are few publications concerning neurological symptoms caused by synovial cysts. We found only a single case of a cervical synovial cyst, located at atlantoaxial joint, causing myelopathy due to cervicomedullary compression in an 88 year-old female patient, excised via a right posterolateral approach. Another case reported a cyst located in the thoracic spine causing spastic paraparesis in a young girl, which was removed thoroughly by laminectomy.

The location of a synovial cyst influences its clinical presentation, but the signs and symptoms are the same of other spinal diseases commonly encountered such as herniated disc, spinal stenosis and spondylisis. In the lumbar spine, they can present with as low back pain and lumbar radiculopathy. In the cervical and thoracic spine synovial cysts can also present with radiculopathy, rarely causing myelopathy. In this case, the cyst was located in a right posterolateral position, compressing the spine and causing myelopathy. Symptoms may oscillate because these cysts increase under mechanical stress and can change in size. Rarely, synovial cysts of the lumbar spine may rupture and hemorrhage into the epidural space resulting in an acute increase in pain and radicular symptoms and causing symptomatic cauda equina compression.

MRI has become the primary imaging technique for evaluation and diagnosys of synovial cyst. Typical findings include increased T2 signal intensity and low to moderate T1 signal intensity, and a thin rim of paramagnetic contrast often enhances the periphery of the cyst. Axial T1 and T2-weighted images are more useful for evaluating thecal sac and radicular compression. Occasionally, the cysts contain blood, and these are seen as low intensity on T2-weighted images. In the present case the cyst was hypointense on T1 and hyperintense on T2-weighted images. On computed tomography, the cysts are difficult to differentiate from disc herniation, unless they are peripherally calcified or contain gas.

The differential diagnosis of a synovial cyst includes herniated disc, perineural and arachnoid cyst, meningioma, schwannoma, meningoima, metastatic tumor and hypertrophic synovitis. An unequivocal diagnosis is only made based on histopathological exam.
REFERENCES


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