

Non-Operative Management of a Cervical Zygoapophyseal Joint Cyst: Case Report

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Abstract

This report describes a case of an intraspinal extradural cyst arising from the C7-T1 zygapophyseal joint, resulting in spinal cord compression with the presentation of minimal pain and no pathologic neurologic findings. A 71-year-old male presents with a 4-month history moderate neck pain, radiating to the left shoulder. Physical examination revealed no motor or sensory deficits. Muscle stretch reflexes were intact in bilateral upper and lower extremities, and there was no imbalance with ambulation. Cervical MRI revealed a large cystic structure arising from the left C7-T1 zygapophyseal joint a causing compression of the spinal cord. He was managed conservatively with physical therapy given his level of pain and lack of neurological deficits and demonstrated improvement in his symptoms. Despite their rare occurrence, cervical intraspinal cysts causing cord compression can be considered a source of mild neck pain and can be managed conservatively in the absence of neurological symptoms.

Keywords: Neck pain; Cysts; Zygapophyseal joint; Spine

Introduction

Cervical intraspinal extradural cysts are quite rare and are more common in the lumbar spine. When found in the cervical region, they typically arise at the C1-C2 junction or adjacent to the zygapophyseal joints at the C7-T1 level [1]. The pathogenesis of these cysts remains unclear and several mechanisms have been hypothesized to explain their development. These factors include degeneration, trauma, and inflammation [2-6]. The cysts usually cause pain and commonly cause radicular or myelopathic symptoms secondary to the mass effect on adjacent neurologic structures. Surgical excision is often the treatment for symptomatic cervical cysts because of the presence of neurological involvement. We report an intraspinal extradural cyst arising from the C7-T1 zygapophyseal joint, resulting in significant a spinal stenosis and spinal cord compression with the presentation of minimal pain and no pathologic neurologic findings.

Case Description

71-year-old retired professor presented to a university based physiatric outpatient clinic with a 4-month history of moderate neck pain, which was rated a 4 on the numeric pain rating scale. The pain radiated to the superior lateral left shoulder, and was characterized as dull and achy. The symptoms started insidiously and there was no reported trauma, bowel or bladder changes, or imbalance.

Physical examination revealed no motor or sensory deficits. Muscle stretch reflexes were intact in bilateral upper and lower extremities. Spurling and Hoffmann's tests were negative bilaterally [7,8]. There was no imbalance with tandem walk. There was left paraspinal tenderness on palpation of the lower cervical spine [9,10].

Cervical radiographs displayed no instability with flexion and extension and multilevel degenerative disk and zygapophyseal arthritis. Cervical MRI revealed a 1.4 × 1.5 × 0.6 cm large cystic structure arising from the left C7-T1 zygapophyseal joint a causing moderate spinal canal stenosis with compression of the spinal cord. There was multi-level zygapophyseal arthritis and minimal anterolisthesis of C4 over C5 and C7 over T1 (Figure 1).

He elected non-surgical conservative management given his mild pain and lack of neurological deficits. Symptoms were managed with a physical therapy program encompassed the principles of mechanical diagnosis and treatment. It also incorporated elements of postural

re-training and education in proper ergonomics [11]. His symptoms improved over a six-week course of physical therapy and he elected no further treatment.

Discussion

An intraspinal extradural cyst is a general term that encompasses synovial cysts, ganglion cysts, arachnoid cysts, and cysts originating from the intervertebral disc or ligamentum flavum. Another relevant term is juxtafacet cyst, which includes synovial and ganglion cysts arising adjacent to the zygapophyseal joint [12]. Distinguishing between intraspinal ganglion and synovial cysts is difficult on the basis of imaging, and the distinction is made pathologically. Furthermore, there is no clear clinical significance in distinguishing between these two cysts since treatment and prognosis are identical [2]. In this case report, the specific cervical cyst cannot be definitively determined since surgical excision was not pursued and pathological examination was not possible.

Intraspinal extradural cysts occur rarely in the cervical spine

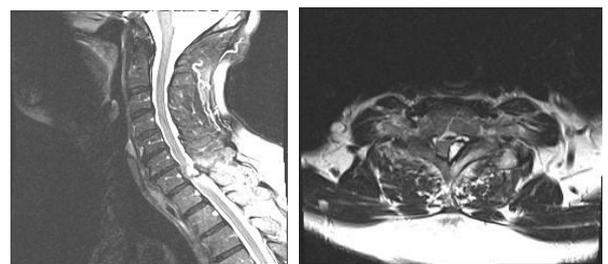


Figure 1: T2 weighted MR images of the cervical spine.

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compared to the lumbar spine. There is a predilection to develop at the C1-C2 junction or C7-T1 level, with 63% of the reported cases occurring at these levels [1]. Twenty cases, including this one, were derived from the C7-T1 zygoapophyseal joint [13]. It is unclear why the majority of lower cervical cysts arise from this level, and not the C5-C6 level, where degenerative changes are most frequent. It is suggested that increased cyst occurrence at the C7-T1 is associated with it being immediately superior to the less mobile thoracic spine [14].

The exact etiology of intraspinal cysts remains unclear and several factors are thought to contribute to their development. These include degeneration, trauma, and inflammation. Associating pathology observed with occurrence of these cysts include intervertebral disc degeneration and spondylolisthesis [3]. It is proposed that excessive movement at the zygoapophyseal joint is involved with cyst formation [15]. Another hypothesis entails they are primarily related to degenerative changes within the joint [4,5]. It's the author's opinion that these two theories are not mutually exclusive, and both processes can occur concurrently and contribute to cyst formation. The case supports this stance with the patient having multilevel zygoapophyseal joint degeneration, in addition to anteriolisthesis at the level of the cyst.

Trauma is considered a cause for cyst development however in many cases the interval time between the incident and clinical onset was quite long, which casts doubt on the direct correlation [2,4,6]. Trauma can be associated with acute expansion of cysts. Two cases of paraplegia were reported after trauma in patients with cervical cysts [4,5]. Hemorrhage into the zygoapophyseal joints is uncommon, however it can lead to acute nerve compression [16,17]. In non-traumatic cases, such as the one reported here, the cysts are thought to develop slowly over time. We believe that this theory is consistent with the case, given the underwhelming signs and symptoms in the setting severe cord compression without myelomalacia. It is presumed that an acute process would present with more severe symptoms and neurological involvement.

The treatment for cervical intraspinal cysts in cases of irretractable pain and severe neurological involvement is surgical excision. In the cervical spine, surgical care typically consists of laminectomy and cyst excision. Cyst recurrence is not common with complete or even partial cyst excision [18]. Non-surgical management is a viable option and is often considered when pain is tolerable and no motor deficits are present. Conservative care consisting of physical therapy, analgesics, and anti-inflammatory medications should be considered in these instances. There are two reported cases of cervical intraspinal cyst resolution, confirmed on imaging, following conservative care [19,20]. In the case presented, a follow-up MRI was not performed however the authors are curious if any interval change in the cyst's size or perhaps cyst absorption occurred after physical therapy. Percutaneous aspiration of the cysts is another non-surgical option, which may provide temporary relief of symptoms, but must be weighed with the potential neurological complications of the procedure even with the assistance of advanced guided imaging. In general, it is not recommended unless there is an absolute contraindication to surgery [21]. In the case presented, the patient preferred conservative management with physical therapy and anti-inflammatory medication. This is a reasonable option given his lack of symptoms and normal neurologic examination. Proper education was given in respect to monitoring progressive symptoms, including weakness, imbalance, or bowel and bladder changes, which indicate neurologic compromise.

In conclusion, cervical intraspinal extradural cysts are rare, but when present they commonly occur at the C1-2 and C7-T1 levels. They typically present as a radiculopathy or myelopathy. This case

demonstrates a cervical cyst presenting with minimal pain and absence of pathologic neurologic signs despite significant neural impingement and spinal cord compression. Cervical intraspinal cysts causing cord compression are rare but can be considered a source of mild neck pain and can be managed conservatively in the setting of minimal or no neurological symptoms.

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