



Cervical Spinal Epiduritis, Pertaining to Diagnosis, Treatment, and Outcomes: on Severe Spinal Cord Stenosis. A Case Report and A Literature Review

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ABSTRACT

Introduction: Osteomyelitis coupled with immunocompromised people with drug or intravenous drug use produces infective endocarditis. Remember that atlantoaxial subluxation accompanied by infection of the pharynx or nearby tissues is termed Grisel syndrome. [2]. Epidural abscesses are sometimes surgical emergencies, depending on the type of neurological impairments. An upper cervical epidural abscess in the occiput at the level of C2 is highly rare and uncommon. At the level of the subaxial spine at C3-C6 OR C7-T1 is the cervicothoracic area.

Case Description: A 54-year-old female patient reported experiencing cough and catarrhal symptoms for three months due to a previous coronavirus infection, accompanied by shortness of breath and joint pain. The patient's neck pain intensified, radiating to the left arm (myelopathy); conservative treatment was ineffective. MRI of the cervical spine indicated purulent spondyloarthritis affecting the left C4-C6 facet joints, with severe spinal cord stenosis (Figure 1), accompanied by epiduritis in the adjacent segment and abscess formation in the posterior paravertebral muscles of the neck. The surgical intervention consisted of a left C5-C6 hemilaminectomy with a microdiscectomy with which a metal cage was placed after sanitation and drainage of the purulent epiduritis, approach to the spondyloarthritis in the C4-C6 segments, and management of an intermuscular abscess with a cage.

Discussion:

Conclusion: Our clinical case shows a cervical spinal epiduritis with spinal cord stenosis, confirmed by imaging; therefore, once the diagnosis was confirmed, the decision was to perform an eminent surgical intervention with a hemilaminectomy and microdiscectomy.

Keyword: Spine, Abscess, Stenosis, Epiduritis, Myelopathy, Surgery, Case Report.



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1. Introduction

A spinal epidural abscess is an infection defined by the buildup of purulent material in the area between the dura mater and the osteoligamentous spaces of the spinal canal. The incidence rate ranges from 0.18 to 1.96 per 10,000 patient admissions. [1]. In the craniocervical region, infections are infrequent but are associated with the degeneration of the odontoid ligaments and the prospective risk of subluxation or atlantoaxial dislocation. Osteomyelitis coupled with immunocompromised people with drug or intravenous drug use produces infective endocarditis. Remember that atlantoaxial subluxation accompanied by infection of the pharynx or nearby tissues is termed Grisel syndrome. [2]. Epidural abscesses are sometimes surgical emergencies, depending on the type of neurological impairments. An upper cervical epidural abscess in the occiput at the level of C2 is highly rare and uncommon. At the level of the subaxial spine at C3-C6 OR C7-T1 is the cervicothoracic area. [3]. Cervical spine epidural abscess in 4 series, which were performed within 24 hours after admission, patients underwent corpectomy plus anterior cervical fusion ACDF with titanium cages and autograft. Followed by x-rays, MRIs, and CTs to determine infections, as well as regression of spinal cord compression and decreased instability and deformity. [4]. An abscess is primary and is a rare form of spinal epidural abscess; so secondary invasive procedures to adjacent infectious sites, such as spondylodiscitis, common in patients with diabetes, obesity, cancer, and other chronic diseases, occur. The epidural abscess occurs due to viral severity, the patient's immune status, the presence of bacteremia. [5].

2. Case Series

A 54-year-old female patient reported experiencing cough and catarrhal symptoms for three months due to a previous coronavirus infection, accompanied by shortness of breath and joint pain. The patient's neck pain intensified, radiating to the left arm (myelopathy); conservative treatment was ineffective. MRI of the cervical spine indicated purulent spondyloarthritis affecting the left C4-C6 facet joints, with severe spinal cord stenosis (Figure 1), accompanied by epiduritis in the adjacent segment and abscess formation in the posterior paravertebral muscles of the neck. The surgical intervention consisted of a left C5-C6 hemilaminectomy with a microdiscectomy with which a metal cage was placed after sanitation and drainage of the purulent epiduritis, approach to the spondyloarthritis in the C4-C6 segments, and management of an intermuscular abscess with a cage. During postoperative follow-up in the ICU. A tracheostomy was performed in response to complications arising from bilateral polysegmental pneumonia, bilateral pleural effusion, reactive synovitis, arthritis of large joints, along with sepsis. Following admission to the intensive care unit (ICU), treatment improved her well-being; sepsis, spondylodiscitis, pneumonia, and spondyloarthritis were reversed; spontaneous breathing was restored; and decannulation was performed. and the tracheostomy was epithelialized; therefore, the patient was discharged home. Shown in figure 1,2,3,4, table 1.

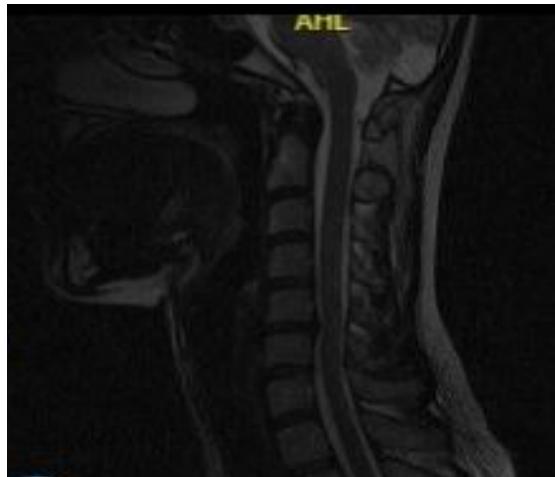


Figure 1. Preoperative MRI status with Spinal stenosis C5-C6, associated with radiculopathy

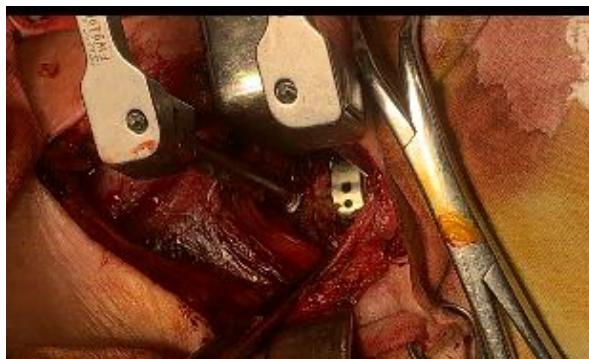


Figure 2. ACDF muscle approaches with sanitation and drainage of purulent epiduritis, spondyloarthritis, intermuscular abscess was done. Approach left C5 hemilaminectomy with metal cage.

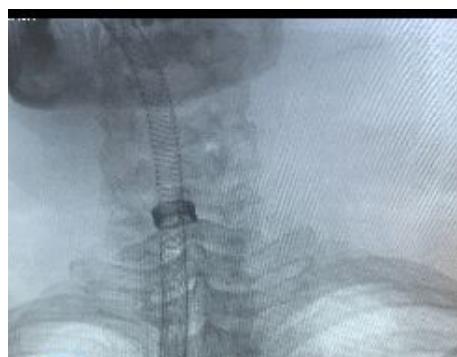


Figure 3. Postoperative fluoroscope cage visualization after procedure was done.

3. Discussion

The debate between early versus late decompression surgery in subaxial spinal cord injuries remains an area of ongoing clinical interest. In the cases presented, early decompression (Case 1) yielded significantly better outcomes in terms of rapid recovery and functional improvement. The prompt decompression in this case, performed within hours of injury, was crucial in minimizing spinal cord ischemia and preserving neurological function. Early decompression allows for the restoration of spinal cord perfusion and prevention of irreversible neuronal damage, which is key to

achieving optimal recovery. This aligns with numerous studies suggesting that early intervention is linked to better outcomes, especially in cases involving acute spinal cord compression.[5]

According to the protocols of different institutions, intraoperative blood samples or cultures are collected well before administering intravenous antibiotics. Once the IV antibiotic therapy is performed, after obtaining the results of the bacterial sample, it is then adapted to have a better result in the antibiogram. [6]. [11]. [12]. C-reactive protein levels are relatively lower in the thoracic area than in other areas. In terms of prevalence levels, it is striking in endocarditis with disseminated infections, such as thoracic and cervical infections. Epidural abscesses have shown a higher incidence at the cervical level. The mortality rate is 12.1% in one month at the cervical level, 12.5% in the thoracic and lumbar region, and 13.4%, but in disseminated disease, 22.2%. [7]. [13]. [14]. The upper cervical level tends to be less affected than the lower level. 11% at the C1-C3 level and 33% at the C6-T1 level; previously infected with *S. aureus* and methicillin-resistant *S. aureus*. Also with methicillin sensitivity and streptococci being the most common. There were also reports of pseudomonas and brucella recovered. Some patients were treated with antibiotics and surgery. As the surgical technical approaches with anterior and posterior access, with conventional fusion methods, either with discectomy, laminectomy, or corpectomy operations. [8]. [15]. After sampling, intravenous treatment was started, which included flucloxacillin, ceftriaxone, and metronidazole. The antibiotic treatment can be changed to amoxicillin or clavulanic acid in a 6-week administration. Because it is considered the gold standard for spinal epidural abscess, when involving neurological deficits, the solution is surgical decompression. When involving affected discs with vertebral bodies and subsequent decompression through laminotomy and/or hemilaminectomy with fusion and corpectomy. [9]. [16]. Normally, in epidural spinal abscesses, a surgical plan is adopted depending on the vertebral level or location of the abscess, whether anterior or posterior, for which reason patients undergo surgical approaches in two stages, in a decompression and stabilization approach, as in microsurgical and transoral odontoidectomy with abscess evacuation, in a decompression stage, continued with fixation of the posterior cervical spine and with a stage of cervical stabilization. [10]. [17]. [18].

Table 1. Differential diagnosis of cervical or lumbar epiduritis or spinal abscess, spondylodiscitis.

References	Diagnose	Age	Patients	examples
[19].	cervical spondylosis	47.18 ± 6.54	132	264
[20].	epidural hematoma	70 years	26	8 cervical
[21].	HIV-Associated Vacuolar Encephalomyopathy	35	1	80
[22].	Leptomeningeal Carcinomatosis	55-57	17	12
[23].	multiple sclerosis	39-66	27 328 patients	23 Novartis multiple sclerosis clinical trials

In multiple sclerosis (MS), as a differential diagnosis, the introduction of proteasome inhibitors, immunomodulatory drugs, and monoclonal antibodies has improved the life expectancy of patients with multiple myeloma worldwide. This does not ignore the complications present in patients, as it is present in 70% of cases, with osteolytic foci leading to pathological fractures. 50% of these patients may suffer falls, which can cause spinal instability and neurological disorders. Spinal or spinal cord compression can also be observed in 10% of patients with multiple sclerosis. For this reason, radiotherapy is the primary treatment, along with chemotherapy or targeted therapy for neurological dysfunction. [24].

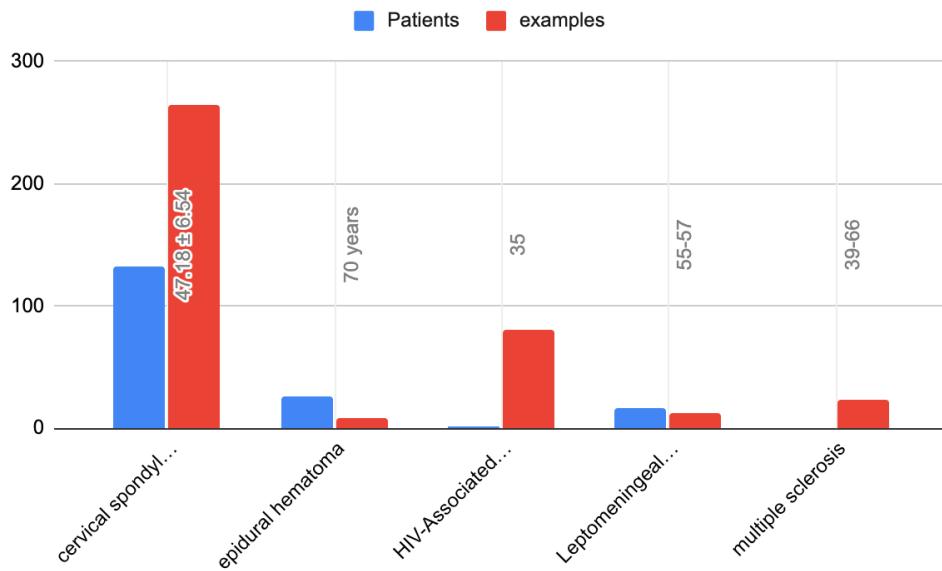


Figure 4. Associated pathologies and marked as differential diagnosis of spondylodiscitis.

When performing left-sided hemilaminectomy on the T12-L1-L5-S1 vertebrae via TLIF in the lumbar region with decompressive microdiscectomy. In spondylodiscitis and epiduritis, which contribute to spinal canal stenosis leading to the destruction of the intervertebral body or disc, techniques such as TLIF in posterior lumbar interbody fusion or anterior lumbar interbody fusion (ALIF) are used in the management of patients with spondylodiscitis. [25-26-27].

4. Conclusion

Our clinical case shows a cervical spinal epiduritis with spinal cord stenosis, confirmed by imaging; therefore, once the diagnosis was confirmed, the decision was to perform an eminent surgical intervention with a hemilaminectomy and microdiscectomy. During the procedure and drainage of the wound, a sample was taken for the identification of the existing pathogen by means of culture and initiation of antibiotic therapy. In the postoperative period, above all, adequate ventilation or tracheostomy to maintain the airways clear, a focus of pneumonia was confirmed during his follow-up in the ICU, for which he was under therapy with rigorous monitoring. Our patient improved, and after good results, he was discharged.

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