

Spinal Epidural, Retropharyngeal and Elbow Abscess in a Drug Addict Patient: A Case Report

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Abstract

Background: Intravenous drug use is a risk factor for central nervous system and spinal cord infections. The risk of spinal cord infection increases in cases where the immune system is suppressed. Neck pain, neck stiffness, high fever, and neurological deficits are common clinical symptoms and findings in cervical spinal epidural abscesses.

Case Report: A heroin-addicted male patient presented to the emergency department with complaints of weakness in the legs and stiffness in the neck, which started after heroin injection in the inguinal region. On physical examination, there was stiffness in the neck, and neck extension was limited. He noticed numbness in his arms and legs when he tried to extend his

neck. He had a fever of 38.3 °C. Neck soft tissue tomography revealed an abscess in the C5–6 prevertebral area and retropharyngeal area. **Magnetic** resonance imaging showed a hyperintense appearance in the spinal cord at the C4-6 level and a spinal epidural abscess. The patient underwent discectomy and abscess drainage for a spinal epidural abscess at the Department of Neurosurgery. Methicillin-sensitive *Staphylococcus Aureus* was grown in the abscess culture. During hospitalization, while antibiotic treatment had just been started, an abscess was observed in the elbow joint, and the abscess was drained by local surgery.

Conclusion: Spinal cord infections can occur in patients who use intravenous drugs. Cases of

simultaneous infections in different parts of the spinal cord have been reported. However, simultaneous spinal cord infection with retropharyngeal abscess and elbow joint abscess made our case interesting. It is thought that immunosuppression and the haematogenous spread of the microorganism caused this condition.

Keywords: Heroin, Drug Addiciton, Spinal Abscess

INTRODUCTION

Spinal epidural abscesses (SEA) are a rare condition with catastrophic outcomes. In the literature, the incidence rate has been reported as 0.2–1.2 per 10,000 hospitalized cases. Approximately half of the patients are misdiagnosed at presentation (1). Intravenous drug users (IVDUs) are at risk for the central nervous system and SEA, regardless of other comorbid conditions. This is thought to be due not only to bacterial contamination of the intravenous drug administration material but also to suppression of the cellular and humoral immune systems of drug addicts and lymphocyte opiate receptor-mediated T-lymphocyte inactivation (2, 3).

Patients at risk for SEA other than intravenous drug use include patients with chronic renal failure, HIV+ patients, organ transplant patients, patients with immunodeficiency such as steroid users, and patients with comorbidities such as advanced age, diabetes, alcoholism, and malignancy. These are conditions in which the immune systems of patients are suppressed. IVDU is a patient group that is open to local and systemic bacteremia as well as immunosuppression. Therefore, it can be concluded that the incidence of SEA is higher in the IVDU group (4).

The classical triad in cervical SEA has been reported as neck pain, neck stiffness, and high fever. In addition, motor neurological deficits, weakness, cranial nerve palsies, headaches, back

pain, dysphagia, and changes in consciousness are other symptoms and findings (5).

The most common pathogens encountered in both blood cultures and abscess cultures are methicillin-sensitive *Staphylococcus aureus* (40%) and methicillin-resistant *Staphylococcus aureus* (30%) (1). In addition, *Staphylococcus epidermidis*, *Escherichia coli*, *Pseudomonas aeruginosa*, anaerobic bacteria, and fungal infections may be responsible. The gold-standard imaging method for diagnosis is magnetic resonance imaging (MRI) with gadolinium. With this method, a 3-dimensional idea about the dimensions of the abscess is obtained, and a differential diagnosis with solid lesions such as tumors is provided (6).

Although conservative approaches have been reported to be effective in the treatment of cervical SEA, the main approach is surgical techniques. The necessity of surgical intervention, especially in patients with neurological deficits, is an accepted approach in the literature. The use of antibiotics before and after surgery also plays an important role in the treatment (6–7).

In this case report, we aimed to present a rare case of cervical SEA that developed after heroin injection into the femoral region in an intravenous drug-addicted patient and our approach to this case.

CASE REPORT

A 36-year-old male heroin addict was admitted to the emergency department with complaints of progressively increasing weakness in the legs, which started 24 hours after an inguinal heroin injection. He also complained of neck pain, stiffness in the neck, and a high fever. Vital signs were arterial blood pressure of 123/80 mmHg, pulse rate of 90/minute, respiratory rate of 18/minute, and temperature of 38.1°C. On physical examination, the patient's consciousness was clear, and cooperation and orientation were complete. Light reflex was +/+, pupils were isochoric, eye movements were normal, and there was no evidence of cranial nerve damage. There was stiffness in the neck, and neck extension was limited. He described numbness in the arms and legs when the neck was extended. On motor examination, muscle strength was 4/5 in both upper extremities and 2/5 bilaterally in the lower extremities. Deep tendon reflexes were decreased. There was a sensory deficit below the C6 level. Vibration sensation was decreased in the lower extremity. Anal sphincter tone was decreased. Laboratory tests revealed WBC: 17490 mcg/L (86% neutrophils) (normal range: 4500-11000 mcg/L), Hgb: 11.7 g/dL (normal range: 12.6-17.4 g/dL), creatinine: 0.56 mg/dL (normal range: 0.7-1.2 mg/dL), CRP: 249.6 mg/L (normal range: <5 mg/L), AST: 70 U/L (normal range: <55 U/L), ALT: 24 U/L (normal range: <38 U/L). The anti-HCV test was positive in hepatitis tests.

Non-contrast brain tomography (CT) and magnetic resonance imaging (MRI) performed for conditions that may involve the central nervous system showed no pathology. Contrast-enhanced neck soft tissue CT imaging was performed in the patient who had a neurological deficit, described numbness and radiating pain with neck movements, and no pathology was seen in brain CT or MRI. Contrast-enhanced soft tissue CT of the neck showed a suspicious contrasting area (retropharyngeal abscess?) in the C5-6 prevertebral area and retropharyngeal area (Figure 1).



Figure 1. Contrast-enhanced neck soft tissue tomography showing suspicious contrast enhancement in the C5-6 prevertebral area and retropharyngeal area (retropharyngeal abscess?)

Cervical MRI with gadolinium showed cervical kyphosis, a hyperintense appearance in the spinal cord at the level of the cervical 4-6 vertebrae, and an appearance compatible with the cervical spinal cord abscess at the same level (Figure 2).

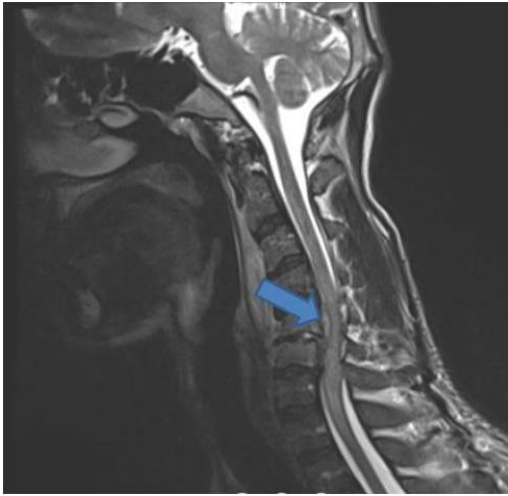


Figure 2. Appearance compatible with hyperintense abscess in the spinal cord at the C4-5 level on T1-weighted magnetic resonance imaging in sagittal and axial sections. White arrows indicate anterior abscess and black arrows indicate posterior abscess

The patient had abscess in both anterior and posterior epidural space. With the recommendation of the Infectious Diseases department, Meropenem (3x2 gram) and Teicoplanin (1x800 mg) were started intravenously empirically. The patient was consulted to the department of Otorhinolaryngology for retropharyngeal abscess and was recommended to continue the antibiotherapy initiated by Infectious Diseases. The patient was hospitalized by the Department of Neurosurgery. The abscess in the spinal cord was drained, and pus-shaped abscess content was observed. The patient with an infected disc at the C5-6 level underwent abscess drainage and discectomy with a microsurgical procedure through an anterior approach. Methicillin-sensitive *Staphylococcus Aureus* was grown in the abscess culture. Antibiotic treatment was

continued for 2 weeks during hospitalization without change.

Methicillin-sensitive *Staphylococcus Aureus* was grown in the blood culture obtained from the emergency department before hospitalization. On the first day of hospitalization, while antibiotic treatment had just started, swelling and redness developed in the left elbow joint. On examination, the elbow joint was edematous and looked like an abscess with fluctuation. Abscess drainage from the elbow joint was performed by the Orthopedics department. Methicillin-sensitive *Staphylococcus Aureus* was grown in the abscess culture.

After the operation, the patient was transferred to the Infectious Diseases ward. On neurological examination, the upper extremity muscle strength deficit was completely recovered, and the patient started to walk with support after 1 week. In the physical examination 2 weeks later, the upper extremity muscle strength was evaluated as 5/5 bilaterally, and the lower extremity muscle strength was evaluated as 4/5 bilaterally. WBC and CRP values were in the normal range. Physical therapy and Neurosurgery outpatient clinic controls were recommended, and the patient was discharged on the 15th day after hospitalization.

DISCUSSION

SEA related to intravenous drug use are typically observed between the ages of 30 and 40. The fact that they are seen at these ages and present with

non-specific symptoms and findings may lead to delays in diagnosis and treatment (3). SEA due to intravenous drug use usually affects young patients. In a study comparing patients with and without intravenous drug use with a diagnosis of SEA, the mean age of patients using intravenous drugs was 43 years. More male patients are affected. This is consistent with the fact that drug addiction is more common in the young male population (4). It has been reported that approximately half of the cases are misdiagnosed at presentation. Early diagnosis and early surgical intervention are essential for treatment (1).

Neurological deficits developing in SEA cases are evaluated in four stages. In stage 1, it can be summarized as neck-back pain at the level of the affected vertebra, high fever, tenderness in the spine, radicular pain radiating around the affected vertebra, hyperreflexia and nuchal rigidity in stage 2, hypoesthesia, motor weakness, weakening in bladder and bowel functions in stage 3, and paralysis in stage 4 (8). In a study in which IVDU and non-IVDU groups were compared, it was found that the cervical part of the vertebrae was mostly affected in the IVDU group and the thoracic vertebrae were mostly affected in the non-IVDU group. It was found that 61% of patients with IVDU presented with neurological deficits. In these patients, the C4-5 level of the spinal cord is most commonly affected. High fever, pain, and various neurological deficits have been frequently reported (4). Our case was a 36-year-old male patient who stated that he used heroin every day.

He was evaluated as stage 3-4 with the addition of complaints of neck pain, stiffness in the neck and weakness in the lower extremities, which prevented a delay in diagnosis.

Risk factors for spinal epidural abscesses are immunocompromised conditions such as intravenous drug use, diabetes mellitus, malignancies, organ transplantation, steroid use, HIV infection, alcoholism, and chronic renal failure. A spinal epidural abscess occurs with hematogenous in patients using intravenous drugs. The purulent material accumulated between the dural spinal membrane and the bone and ligamentous structures of the spine is responsible for the clinical findings (1). According to a case series reported in the literature, 80% of IVDU patients were reported to be infected with HCV (9). The fact that our patient was infected with HCV may be considered a common consequence of intravenous drug addiction. At the same time, we think that this condition may have contributed to the development of spinal epidural, retropharyngeal, and elbow joint abscesses because of the weakened immunity of the patient. In the literature, the development of spinal epidural abscesses due to intravenous drug use has been reported frequently. It was reported that different parts of the spinal cord, such as the lumbar, thoracic, and cervical regions, could be involved simultaneously in the same patient (10). Although cases of spondylodiscitis and retropharyngeal abscess with SEA have been reported in the literature, it is rare to observe

multiple abscesses developing simultaneously in different parts of the body with spinal cord involvement in the same patient, which makes our case interesting (4, 11).

Epidural abscess should be suspected when laboratory findings such as leucocytosis and increased erythrocyte sedimentation rate are added to clinical signs and symptoms, including neck pain, stiffness in the neck, back pain, a high fever, and neurological deficits. MRI with gadolinium is the gold standard method in the diagnosis (12). In our case, early neurological deficits, neck stiffness, and a high fever helped us make the diagnosis. Firstly, a retropharyngeal abscess was detected by computerized tomography. Afterwards, SEA was thought to be possible in a drug addict patient with a neurological deficit and high infective parameters, and cervical SEA was diagnosed by MRI with gadolinium, which is the gold standard in diagnosis. Blood culture performed in the early period was guiding in terms of antibiotherapy.

Surgical treatment is the primary treatment method for epidural abscesses, especially in patients with neurological deficits. Emergency intervention is required in cases of spinal cord compression. The aim of surgery is not only decompression but also drainage of the abscess, isolation of the responsible microorganism, and debridement of necrotized tissues. Laminectomy, including the posterior longitudinal ligament via the dorsal approach, removal of the spinal process, and drainage of the abscess, is the most common surgical method. The selection of

antibiotics appropriate for the causative agent is important. Small epidural abscesses that do not cause spinal cord compression or neurological deficits can be treated conservatively (7,13). In our case, epidural abscess was drained by anterior approach and discectomy was performed. The infected appearance in the retropharyngeal area was followed conservatively and resolved with antibiotic treatment. An abscess developing in the elbow joint was treated by local surgery.

CONCLUSION

SEA should be considered in the differential diagnosis of intravenous drug users with neck pain, neck stiffness, back pain, a high fever, and neurological deficits. Early diagnosis is important for the early initiation of treatment and the recovery of patients without sequelae. It is interesting to observe abscesses in different parts of the body in addition to SEA in an intravenous drug-addicted patient. It is thought that this may be due to the suppression of the patient's immune system and the distribution of the microorganism in the body by hematogenous spread.

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Conflict of Interest Statement: The author declares that have no conflict of interest.

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