

A Rare Cause of Epidural Abscess: Esophageal Perforation After Radiotherapy

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Abstract

Introduction: Spinal epidural abscess is a rare neurosurgical emergency that is usually seen in invasive interventions to the spinal region, trauma or infection. In our case, anteriorly located spinal epidural abscess, which is caused by spontaneous esophageal rupture as complication of radiotherapy, is described.

Case report: A 60-year-old female patient was admitted to the emergency department with complaints of confusion, high fever and weakness in both legs. The patient had been treated for lung metastasis of breast cancer with radiotherapy. Spinal anterior epidural abscess was observed in the spinal imaging, and it was considered that the abscess developed after esophageal rupture secondary to radiotherapy. After surgery the patient had antibiotic treatment during the postoperative period. Although there are cases of spinal epidural abscess that developed after esophageal rupture in the literature, they were generally observed after interventions to the esophagus or trauma to the chest. In our case, epidural abscess developed after radiotherapy, that caused esophageal rupture, was presented.

Conclusion: Clinicians should consider spinal epidural abscess, which is a rare complication in patients with walking difficulties after radiotherapy, in the differential diagnosis.

Keywords: abscess, rupture, spine, radiotherapy, paresis

Introduction

Spinal epidural abscess (SEA) is a rare neurosurgical emergency that has to be treated early¹. Incidence of SEA is 5.1 per 10,000 hospital admissions². SEA mostly occurs in patients aged 30 to 60¹. Invasive interventions to the spinal region, trauma, systemic or surrounding tissue infection play a role in its etiology³. In spite of being cases of spinal epidural abscess that secondary to esophageal rupture in the literature, these generally developed after interventions to the esophagus or traumatic blows to the thoracic wall or vertebrae⁴. In our case, anteriorly located spinal epidural abscess, which is caused by spontaneous esophageal rupture as complication of radiotherapy, is described.

Case report

A 60-year-old female patient was admitted to the emergency department with complaints of confusion. In addition there was weakness in the lower extremities and difficulty in walking that started two days ago. As far as it was learned, she had fever and swallowing difficulties despite her antipyretic and antibiotic therapy for about ten days. Lung metastasis was detected 2 years ago in the patient who was diagnosed

with breast cancer and the final radiotherapy was applied to the thorax 1.5 months ago.

At the time of admission, the patient's body temperature was 38.2°C, arterial blood pressure: 110/70 mmHg, peak heart rate: 121 beats / min. The patient was confused. The motor muscle strength of both lower extremities was evaluated as 2/5. The deep tendon reflexes of the patient, who described hyperalgesia below the T10-T11 level, could not be obtained bilaterally. Babinski reflex was positive in bilateral lower extremities. In the routine blood samples taken from the patient, WBC: 14.67 / mm³, NEU: 13.66 / mm³, CRP: 187 mg / L were reported. No acute pathology was found in the cranial imaging of the patient. It was observed that her state of consciousness improved after her body temperature decreased with antipyretic therapy. In spinal CT examination, C7-T1 level prevertebrally located hypodense area, diffuse free air images in the prevertebral area of T1-T5 vertebrae and adjacent prevertebral area, and suspicious participation between air images and middle esophagus segment was detected. Also, there were free air images in the posterior part of the spinal cord (Picture 1). In the contrast-enhanced thoracic vertebra MRI examination showed osteomyelitis in the upper thoracic vertebrae, abscess in the prevertebral area, a hyperintense lesion in T2AG with a width of approximately 1 cm in the epidural space at the T2-3 level in the right ante-

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rior section. The lesion was evaluated as an epidural abscess in contrast-enhanced series (Picture 2). Gastroscopy was planned in terms of esophageal fistula and perforation that could cause abscess in the prevertebral region. In the gastroscopic examination, the area covered with secretion and exudate covering $\frac{1}{4}$ of the lumen in an area of approximately 23 cm in the upper esophagus and the perforation opening from the lower part were observed.

The patient underwent decompression surgery with T1-3 level total laminectomy due to cord compression secondary to the spinal epidural abscess. Samples of the abscess obtained were sent to the microbiology and pathology

laboratory. It was observed peroperatively that there were extensive hard granulation tissues around the dura mater. In the same session, a stent was placed in the esophagus by the general surgery clinic for esophageal perforation.

The microorganisms could not be isolated from the material taken during the operation. She was transferred to a physical therapy unit for rehabilitation after antibiotherapy.

After 6 weeks from the surgery, there was no progression of neurological status in proximal of the lower extremities, while there was partial recovery in the leg muscles, full strength was achieved in foot dorsiflexion and plantar flexion.



Picture 1: Diffuse free air images in the prevertebral area of T1-T5 vertebrae

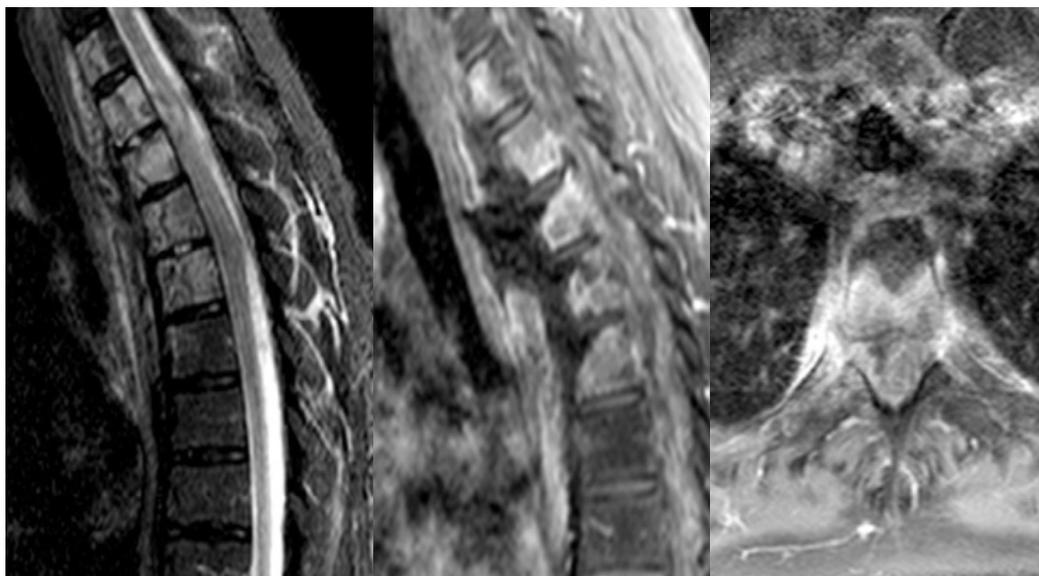
Discussion

SEA is a rare condition in which devastating consequences can be avoided with early diagnosis and treatment. Paraplegia, quadriplegia and even death can be seen in late intervention. Although death can be seen in cases with sepsis or comorbidities, its rates have decreased with the use of antibiotics. The reversible neurological deficit is associated with early diagnosis and decompression of the spinal canal, especially in the first 24 hours²⁻⁴.

In a study by Ghobrial et al., cases of SEA that were treated and not treated in the first 24 hours were compared, and no statistically significant difference was found between the two groups in terms of neurological progression⁵.

In our case, the complaints of difficulty in walking started two days ago and she was operated 8 hours after her admission. In the postoperative follow-up of the patient, partial improvement was observed in her neurological deficit.

SEA, which are frequently located in the lumbar and thoracic regions, are located posteriorly in the canal; however, Lu et al. found that anteriorly located spinal epidural ab-



Picture 2: SEA at the T2-3 level in the right anterior section

scases were more common⁶. In our case, an anterior abscess was observed in the thoracic region.

Spinal epidural abscess clinically presents with low back pain, local tenderness, fever, loss of muscle strength, incontinence and radiculopathy. The classical triad of low back pain, fever and neurological dysfunction are seen in very few cases of SEA^{2,3}.

Our patient, who was admitted to our hospital with fever and paraparesis, had no pain or sensitivity with palpation on the spine, but had hyperalgesia in the bilateral lower extremity.

Risk factors published in the literature are diabetes mellitus (DM), intravenous drug use, alcohol addiction, HIV (Human Immunodeficiency Virus) infection, degenerative joint disease, recent trauma or surgery. Transition of microorganisms to the epidural space can be caused by hematogenous pathways, direct spread of infection from neighboring structures or by catheters in the epidural space^{3,7}.

In our case, two of the risk factors were seen; these are DM and infections that develop after esophageal rupture. We consider that the development of SEA is due to infectious agent passage to the prevertebral area and epidural area after esophageal rupture secondary to radiotherapy. Similarly, in a case report published by Pulle et al., spontaneous esophageal rupture was observed after radiotherapy⁸.

The sensitivity and specificity of contrast-enhanced MRI in the diagnosis of spinal epidural abscess is 90%. Contrast-enhanced spinal CT examinations have low sensitivity, especially in early spinal epidural abscesses, and should not be preferred except in cases MRI is not available³.

Recently, it has been shown that air can pass into the spinal canal from the mediastinum; this can be considered as an indication that there may also be transmission of infection through neighborhood⁷.

In our case, spinal CT scan was performed firstly since it is easier to access under emergency conditions and in order to rule out possible bone pathologies that may cause paraparesis. Contrast-enhanced MRI examination of the patient who had no bone pathology, prevertebral area abscess, SEA and osteomyelitis in the upper thoracic vertebrae was detected.

Usually monobacterial pathogen is seen in SEA, and *Staphylococcus aureus* is the most common agent. Depending on the comorbidities of the patient, gram-negative pathogens or fungal factors may also cause it^{2,3,9,10}. In our case, unlike the literature, there was no microorganism growth from the samples taken. On the other hand, samples sent to the pathology laboratory were reported as active chronic non-specific inflammation. In cases of spinal epidural abscess, it is recommended that antibiotherapy be started empirical-

ly immediately after sampling, and then it is recommended to continue treatment for causative microorganism for 4-16 weeks^{1,3}.

Conclusion

Epidural abscess has many risk factors but secondary to esophageal rupture is rare in the literature. In our case we present a spinal epidural abscess due to esophageal rupture secondary to radiotherapy. Clinicians should consider spinal epidural abscess, which is a rare complication in patients with walking difficulties after radiotherapy, in the differential diagnosis.

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