



EXTENSIVE PRIMARY PYOGENIC EPIDURAL ABSCESS LOCATED IN CERVICOTHORACIC REGION IN A DIABETIC PATIENT

DİABETİK HASTADA PRİMER PYOJENİK SERVİKOTORAKAL YAYGIN EPİDURAL APSE

Selin Tural EMON¹,
Metin ORAKDÖĞEN¹,
Barış ERDOĞAN¹,
Hakan SOMAY¹,
Cezmi Çağrı TÜRK²

¹ Surgeon of Neurosurgery, Department of Neurosurgery, Haydarpaşa Numune Training and Research Hospital, İstanbul.

² Surgeon of Neurosurgery, Department of Neurosurgery, Antalya Training and Research Hospital, Antalya.

SUMMARY:

Spinal epidural abscesses are rare infections. Incidence of epidural abscesses is 0.2-2 /10000. Often they are detected mid-thoracic and lower lumbar area. Risk factors of spinal cord abscess are drug abuse, HIV/AIDS, diabetes, immunosuppression.

A 46-year-old male patient admitted to emergency suddenly developed weakness of his extremities and respiratory distress. The patient was intubated immediately and he was taken to intensive care unit. Cranial and spinal magnetic resonance imaging was showed C1 to T8 epidural abscess. Surgery was performed and anti-biotherapy was given.

We keep our mind that spinal epidural abscess cause such as the severe neurological condition in diabetic patients. We may achieve good outcomes with immediate surgical treatment and appropriate anti-biotherapy.

Key words: Diabetes mellitus, spinal epidural abscess, tetraparesis.

Level of evidence: Case report, Level IV

ÖZET:

Spinal epidural apseler seyrek görülen enfeksiyonlardır. Görülme sıklığı 10 000'de 0.2-1.2'dir. Sıklıkla orta torakal ve alt lomber bölgede tespit edilirler. Spinal epidural abse gelişimi için risk faktörleri madde kullanımı, HIV/AIDS, diabet, immunsupresyondur.

Ani bir şekilde gelişen dört extremitede güç kaybı ve solunumda bozulma şikayeti ile acil servise başvuran 46 yaşında erkek hasta, entübe edilerek yoğun bakım ünitesine alındı. Yapılan kranial ve tüm spinal manyetik rezonans görüntülemelerde C1'den T8'e uzanan epidural apse tespit edildi. Hasta cerrahi yolla tedavi edildi ve uygun antibiyotik tedavisine başlanıldı.

Diabetik bir hastada bu kadar gürültülü bir tablonun altından yaygın spinal apsenin çıkabileceği unutulmamalıdır. Hızlı cerrahi girişim ve uygun antibiyoterapi ile yüz güldürücü sonuçlar elde edilebilir.

Anahtar Kelimeler: Diabetes mellitus, spinal epidural apse, tetraparezi.

Kanıt Düzeyi: Olgu sunumu, Düzey IV.

Adres: Selin Tural Emon,
MD. Dr. Esat Isik Cad., No: 99/7
Kadikoy, 34718 İstanbul, Turkey.
Phone: +90 532 525 38 99
Fax: +90 216 421 43 82
Email: turalselin@gmail.com
Received: 14th March, 2016.
Accepted: 22th May, 2016.

INTRODUCTION:

Spinal epidural abscesses (SEA) are rare infections, the incidence is 0.2-1.2 cases in 10.000 admissions^{5,8}. They affect thoracic region in 50 % of the cases with a male predominance at the age of 30 to-60 years^{5,7-8}. Presenting symptoms are fever, local tenderness and neurological signs secondary to spinal cord compression. There are some risk factors such as IV drug abuse, HIV/AIDS, diabetes and immunosuppression. Diabetes and drug abuse were associated with SEA in 18-54 % and 7-40 % of the cases, respectively^{3,4}. Extensive epidural abscess involving cervical and thoracic region is extremely rare⁷.

Management may be purely medical; however, in some cases surgical decompression is also warranted. High mortality (16 %) and morbidity rates were reported in the literature, particularly in patients with delayed diagnosis or insufficient treatments⁷. Early diagnosis and abrupt treatment was

associated with better neurological outcome and assigned among important prognostic factors².

CASE REPORT:

A 46 years old male patient was intubated and admitted to intensive care unit following his presentation to emergency room with an acute weakness in all 4 extremities. His neurological examination revealed a severe tetraparesis; muscle strength in bilateral upper extremities being 1/5, 0/5 in right and 1/5 in left lower extremities. Radiological evaluation with cranial and whole spinal magnetic resonance imaging (MRI) demonstrated an extensive space occupying lesion compressing the spinal cord from C1-to-T8 levels. The lesion was enhancing in ring-like fashion and the presumptive diagnosis was spinal epidural abscess. Moreover, the enhancement was not only restricted to spinal canal, but also there were extension into paravertebral soft tissues (Figure-1).

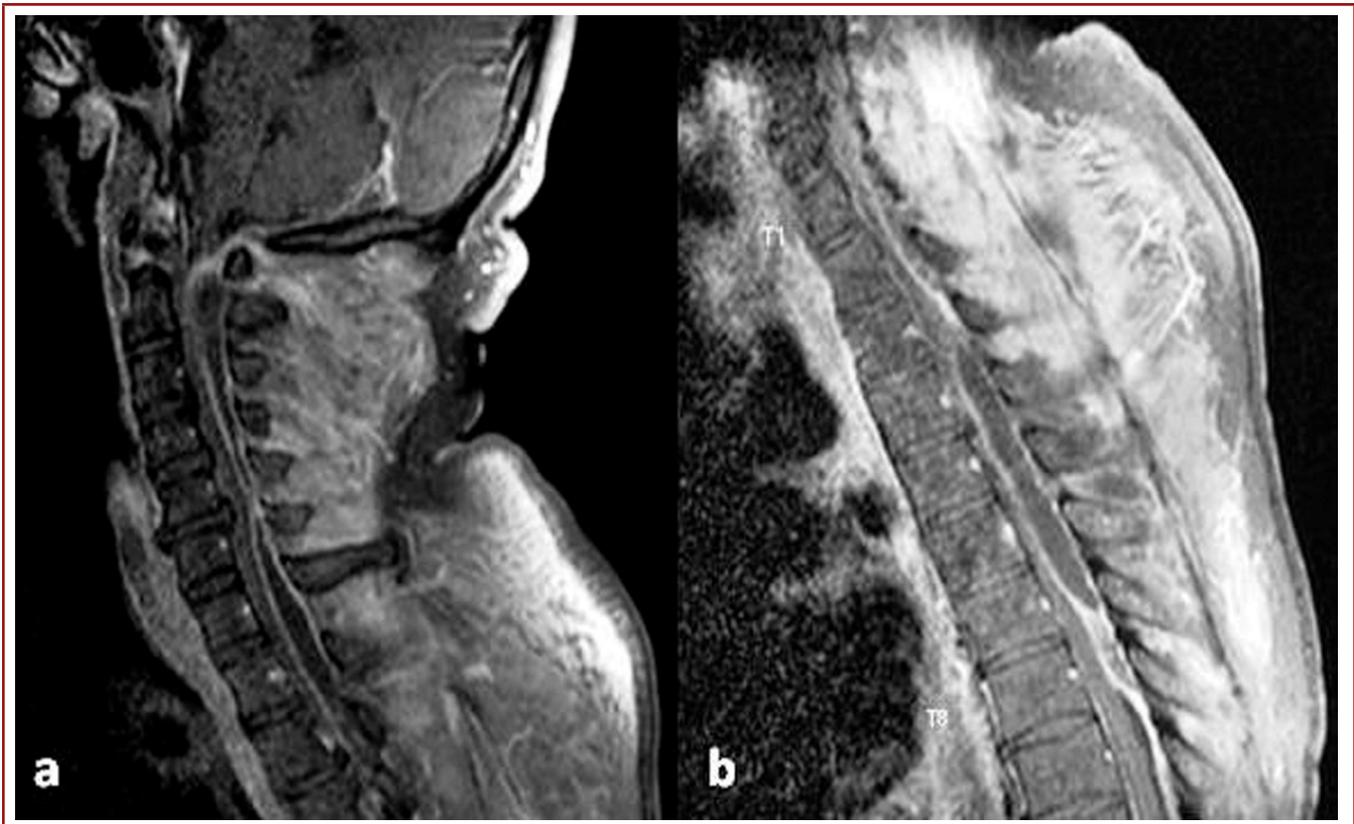


Figure-1. a-b) This postcontrast sagittal T1-weighted cervico-thoracic MRIs demonstrated a space occupying lesion with a ring-enhancement and spinal cord compression extending from C1 to T8 levels. The lesion was compatible with an abscess.

He was operated and the abscess was drained with multiple fenestrations at C2, T1 and T5 levels in order to prevent iatrogenic spinal instability. Later, the epidural space was irrigated with normal saline solution. The dural compression

was relieved on intraoperative inspection, which was also documented by postoperative MRI (Figure-2).

Microbiological evaluation and cultures showed meticilline sensitive *Staphylococcus aureus*.

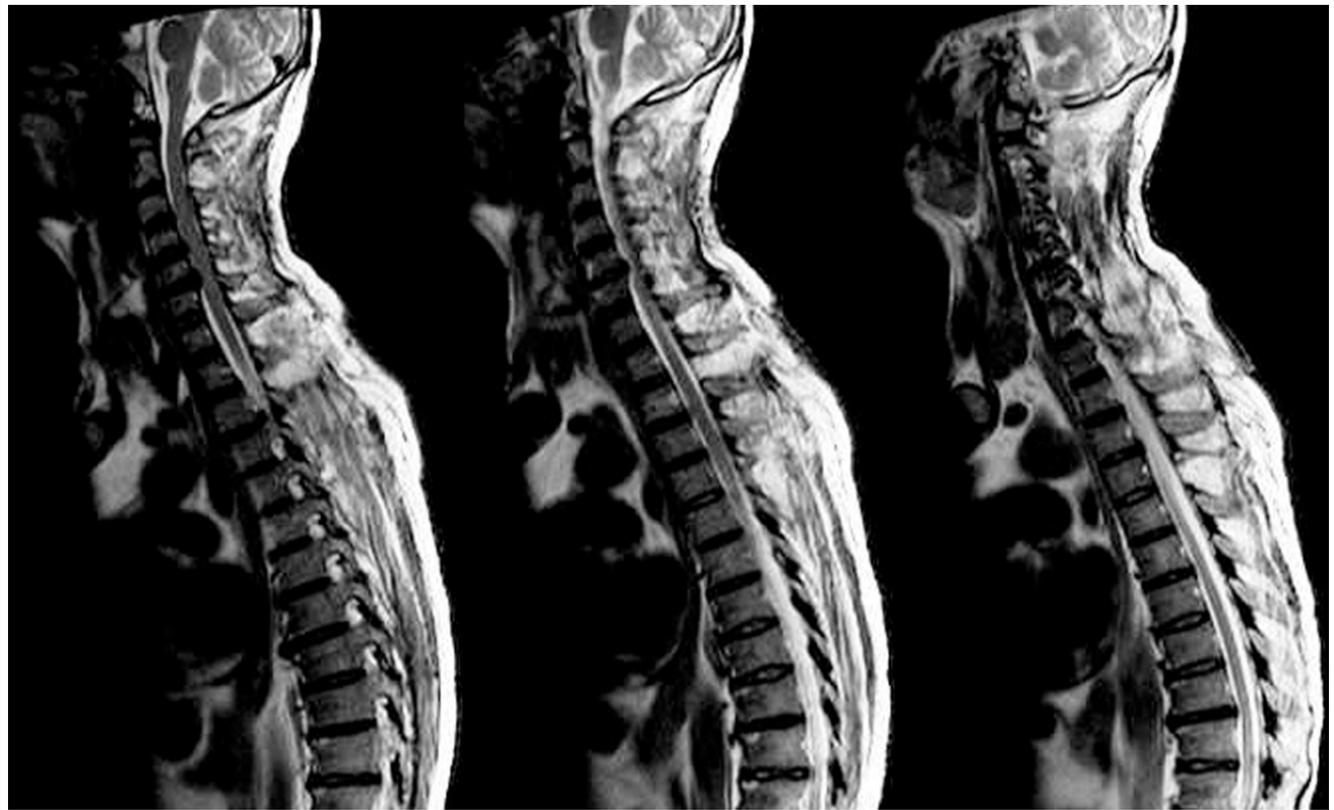


Figure-2. Postoperative sagittal T2- weighted MRI showed complete drainage of the abscess and relieved spinal cord compression following surgery

The antibiotherapy, consisting of ampiciline, cephotaxime and gentamycin, was implemented. The patient improved promptly; he was extubated 88 in postoperative second day and his muscle strength recovered to 4/5 and 3/5 in bilateral upper and lower extremities in early period, respectively.

DISCUSSION:

Spinal epidural abscess was first defined by Morgagni in 1761⁸. They may present with pain, fever, local tenderness, paresis and urine-fecal symptoms, however, classical triad (fever, pain and neurological deficits) was observed in 75-89 % of the cases⁸. Heusner et al.⁸ classified SEA into 4 categories based on their clinical presentations; pain, radiculopathy, weakness and paresis. Our patient had suffered from an extensive SEA affecting upper cervical region; therefore the clinical findings such as acute tetraparesis and respiratory depression were much more dramatic than ever defined in the literature.

SEA are commonly located in lower thoracic and upper lumbar region, this predilection was correlated with rich venous plexus in this region. The abscess may be primary or secondary in nature. Primary SEA are due to hematogenous spread from distant infectious foci such as recurring skin infections,

parenteral infections and decubitus ulcers. Secondary cases are associated with spinal interventions. The abscess are located in the anterior region in case of spondylodiscitis, however, hematogenous cases are prone to posterior part of the spinal cord^{3,5,7}.

Holocord involvement of spine is extremely rare. In the presented case, SEA was situated posterior to spinal cord and caused severe compression. Neurological findings after SEA were correlated with effects of direct compression, vasculitis, thrombosis and spinal cord ischemia due to inflammation.

There are several risk factors for SEA; IV drug abuse, HIV/AIDS, diabetes and immunosuppression with a male predominance (62.5 % of the cases). Common causative pathogens are staphylococcus aureus (63.6 %), gram (-) microorganism, coagulase (-) staphylococcus species (7.5 %) and streptococcus (6.8 %). Meticilline sensitivity was observed in 38.9 % of S. Aureus cases⁸, similar to our case.

Surgical management with decompressive laminectomy for a SEA in thoracic region was first performed by Bart in 1911. In our case, for the sake of spinal stability, multi-level fenestrations were preferred for the abscess drainage. Beside this, surgical timing is important in these patients; literature

findings indicated a rather poorer neurological outcomes in patients with delayed surgical decompression beyond 72 hours^{2,5-6,8}. Moreover, delayed treatment was also associated with mortality rates up to 5-10 %^{1-2,6}. There are some reported prognostic factors correlated with poor outcomes, such as age of the patient, extend of spinal cord compression and duration of symptoms^{1-2,6-7}.

In terms of management strategy, medical treatment was preferred for those cases with mild or no spinal cord compression and without neurological deficits. Literature findings denied any benefit from early surgery over medical treatment. However, these patients should be closely monitored for any deterioration in their neurological status and, in case, promptly directed to surgery in first 24 hours⁴.

Spinal epidural abscess should be considered in patients presenting with acute and progressive neurological deficits, particularly in diabetic patients. High degree of vigilance and awareness is warranted because early surgical decompression and culture-proven antibiotic therapy is associated with promising outcomes.

REFERENCES:

1. Arko L 4th, Quach E, Nguyen V, Chang D, Sukul V, Kim BS. Medical and surgical management of spinal epidural abscess: a systematic review. *Neurosurg Focus* 2014; 37: E4.
2. Avanali R, Ranjan M, Ramachandran S, Devi BI, Narayanan V. Primary pyogenic spinal epidural abscess: How late is too late and how bad is too bad? - A study on surgical outcome after delayed presentation. *Br J Neurosurg* 2016; 30: 91-96.
3. Ghobrial GM, Beygi S, Viereck MJ, Maulucci CM, Sharan A, Heller J, Jallo J, Prasad S, Harrop JS. Timing in the surgical evacuation of spinal epidural abscesses. *Neurosurg Focus* 2014; 37: E1.
4. Grewal S, Hocking G, Wildsmith JA. Epidural abscesses. *Br J Anaesth* 2006; 96: 292-302.
5. Mackenzie AR, Laing RB, Smith CC, Kaar GF, Smith FW. Spinal epidural abscess: the importance of early diagnosis and treatment. *J Neurol Neurosurg Psychiatry* 1998; 65: 209-212.
6. Ohnishi Y, Iwatsuki K, Ishida S, Yoshimine T. Cervical osteomyelitis with thoracic myelitis and meningitis in a diabetic patient. *Clin Med Insights Case Rep* 2015; 8: 37-40.
7. Smith GA, Kochar A 150 S, Manjila S, Onwuzulike K, Geertman RT, Anderson JS, Steinmetz MP. Holospinal epidural abscess of the spinal axis: two illustrative cases with review of treatment strategies and surgical techniques. *Neurosurg Focus* 2014; 37: E11.
8. Tuchman A, Pham M, Hsieh PC. The indications and timing for operative management of spinal epidural abscess: literature review and treatment algorithm. *Neurosurg Focus* 2014; 37: E8.