



Idiopathic Spinal Epidural Abscess: A Case Report

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Abstract: Epidural abscess is a potentially life-threatening disease which can lead to medical-surgical emergency. Idiopathic spinal epidural abscess (SEA) with atypical manifestations is extremely rare. We have found only two such previously reported cases. We describe a further case which led to severe neurological compromise and was not associated with any known risk factors.

Keywords: spinal epidural abscess, idiopathic, neurologic deficits, surgical emergency

Introduction: Spinal epidural abscess (SEA) represents a rare but potentially devastating condition, which is generally defined as pyogenic infection of the epidural space (collection of pus or inflammatory granulation tissue between the dura and the bones of the skull or spine) requiring emergent neurosurgical intervention to avoid permanent neurologic deficits. It is usually associated with well-established risk factors^{1,2,3,4}. Only very few cases are reported as idiopathic SEA^{5,6}. We present a case of sudden onset severe neurologic deficit without any predisposing factor which was later diagnosed as spinal epidural abscess and treated successfully by decompression surgery and proper follow-up.

Case Report: A 32 year old male, weighing 50kg, 156 cm tall was posted for hemilaminectomy at D5 and D10 level with removal of epidural collection. His past history revealed sudden onset severe weakness in the lower limbs, first in the left leg then in the right, followed by complete paralysis of both the lower limbs and urinary retention. The whole episode took place within few hours. There was a history of mild backache 12 hours before this incidence. There was no history of any other systemic illness, diabetes mellitus, recent infection, trauma, drug abuse or spinal procedure.

Pre-operative vitals were stable (pulse rate- 70/min, regular; blood pressure 124/76 mmHg, respiratory rate- 14/min). Central nervous system examination revealed a conscious, oriented patient with normal higher function. Power in both the lower limbs was 1/5 as per Medical Research Council (MRC) rating. His sensory system, other cranial nerves, brain-stem function appeared normal. His other systems including spine examination were also within normal limit. He was already catheterized due to urinary retention.

Laboratory investigations (routine haematological, liver and kidney function, serum electrolyte, coagulation profile), chest x-ray, electrocardiogram (ECG) were normal. Magnetic resonance imaging of spine showed epidural collection at the level of D4-5 and D9-10 compressing the spinal cord anteriorly (Figure 1).

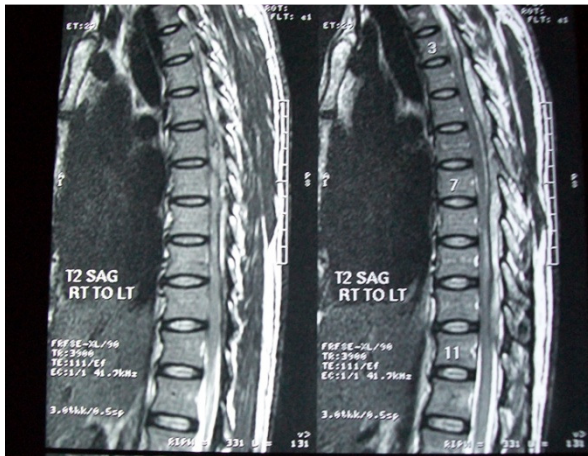


Figure 1: Epidural collection at the level of D4-5 and D9-10.

The patient was posted for emergency decompression surgery and informed consent was taken. The operation was conducted under general anaesthesia. After establishing intravenous (IV) line with 18G cannula, the patient received injection (Inj) midazolam 2 mg, Inj ondansetron 6 mg and Inj glycopyrrolate 0.2 mg. General anaesthesia was induced by Inj fentanyl (2µg/kg) and propofol (2mg/kg) following pre-oxygenation and intubation was done with size 8 flexometallic endotracheal tube using Inj rocuronium (0.6mg/kg). Anaesthesia was maintained with O₂:N₂O (40:60), propofol (infusion at 100-150 µg/kg/min) and intermittent bolus of Inj vecuronium and Inj fentanyl. Intra-operative monitoring included 5 lead ECG, non invasive blood pressure, SpO₂, end tidal carbon dioxide, central venous pressure, urine output, core temperature, bi-spectral index and neuromuscular monitoring. Intra-operative period was uneventful and vitals were stable. Surgery was conducted in prone position and incision was given from D3 to D12; on exposure pus was seen in the epidural space. Hemilaminectomy (on the right side at the level of D5 and left side at the level of D10) was done. Epidural collection was removed and sent for culture sensitivity test. At the end of the surgery, neuromuscular blockade was reversed when the TOF ratio was 40% with 0.5 mg Inj glycopyrrolate and 2.5 mg neostigmine. The trachea was extubated once the TOF ratio was 90%, respiratory effort was adequate and patient was obeying commands. He was shifted to postoperative recovery room.

Post operative broad spectrum antibiotic was continued for 4 weeks. Within days of his procedure, the patient's motor paralysis improved and bladder sensation returned. The histopathology report did not suggest any osteomyelitis and culture report showed no organism. By discharge, the patient had regained the majority of his lower limb function. During the subsequent months, his motor function completely normalized and he did not have any sequel with over eight months follow-up.



Discussion: An epidural abscess is a life-threatening condition that requires early recognition and timely consultation with a neurosurgeon and infectious disease specialist is vital to optimize the neurological outcome. Various studies^{3,4,7} have recognized the causes of epidural abscess which include: direct extension of local infection - usually vertebral osteomyelitis, psoas abscess, or contiguous soft-tissue infection, haematogenous seeding (from endocarditis, urinary tract infection, respiratory tract infections, intravenous drug use, vascular access devices etc.) , invasive procedures or instrumentation like spinal surgery, epidural anaesthesia, steroid and pain-relieving injections, and placement of pain pumps. Established risk factors for spinal epidural abscess^{1,2,3,4} are diabetes mellitus, followed by spinal trauma (may be remote) or surgery, intravenous drug abuse, alcoholism, renal insufficiency, immunosuppression (including HIV infection and malignancy), and spinal/epidural injections. In our case the patient did not present with any of these factors. A staging system for the progression of spinal epidural abscess exists³:

1. Back pain, tenderness, and fever, followed by
2. Radicular pain, reflex abnormalities
3. Sensory abnormalities, motor weakness, bowel and bladder problems
4. Paralysis, which rapidly becomes permanent without surgical intervention.

This progression may occur very rapidly, and some symptoms may be skipped³. Like, our patient gave history of mild back pain for few hours which was then followed by sudden, severe neurological dysfunction. No direct etiological factor was found in our case nor any causative organism or source of infection could be pinpointed. This case report highlights that epidural abscess can present as an apparently insignificant complaint like short duration mild backache without any predisposing factor and can suddenly lead to a life-threatening medical-surgical emergency. The patient's neurological status at the time of diagnosis is the most accurate predictor of outcome and prognosis.

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