



Panspinal Epidural Abscess

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Clinical Image

A 41-year-old man with recent intravenous drug use presented with 2 weeks of progressively worsening neck and low back pain, four days of bilateral upper and lower extremity weakness, and urinary retention. Magnetic resonance imaging (MRI) revealed a T2/STIR hyperintense posterior epidural collection, suggestive of a spinal epidural abscess (SEA), extending throughout the epidural space of the cervical, thoracic, and lumbar spine (Figure 1). Axial T2-weighted imaging revealed compression of the cord with associated intramedullary T2 hyperintensity (Figure 2A). Large fluid collections within the right paraspinous muscles (Figure 2B) and bilateral psoas muscles are consistent with additional soft tissue abscesses.

A C2-L5 laminectomy was performed for evacuation of the SEA. Postoperatively, patient was ventilator- and vasopressor-dependent, and quadriplegic with no sensation to light touch or pain below the clavicle, but was alert, oriented, and following commands. Blood cultures and the epidural fluid collection were positive for methicillin-sensitive *Staphylococcus aureus* and appropriate antibiotics were started. Patient's neurological exam slightly improved with positive shoulder shrug and minimal sensation to the left upper extremity on postoperative day five and six, respectively. The patient underwent tracheostomy and percutaneous endoscopic gastrostomy tube, and peripherally inserted central catheter placement on postoperative day ten. On postoperative day fifteen, patient's exam demonstrated marginal improvement with additional trace movement of the left fingers and minimal strength in the left triceps. The remainder of the neurological exam remained unchanged throughout the hospital course. Patient was ultimately discharged to a ventilator rehabilitation facility on postoperative day fifty-five.

SEA is a rare entity, with distinctive MRI features of T1 iso- or hypointensity, T2 hyperintensity, and gadolinium rim enhancement [1]. *Staphylococcus aureus* is the most commonly isolated organism. Hematogenous spread from distant infectious foci comprise the majority of cases, although in approximately 20% of cases the source of infection is not identified. Predisposing conditions include intravenous drug abuse, diabetes mellitus, trauma, and alcoholism [1]. SEA typically extends three to four vertebral levels [1], but rare cases involving the whole spine, leading to so-called panspinal infection, have been reported [2,3]. The majority of retrospective studies favors surgical drainage with concurrent antibiotic use as the treatment of choice [1]. However, nonsurgical management of a SEA extending the whole spine may be considered, given the

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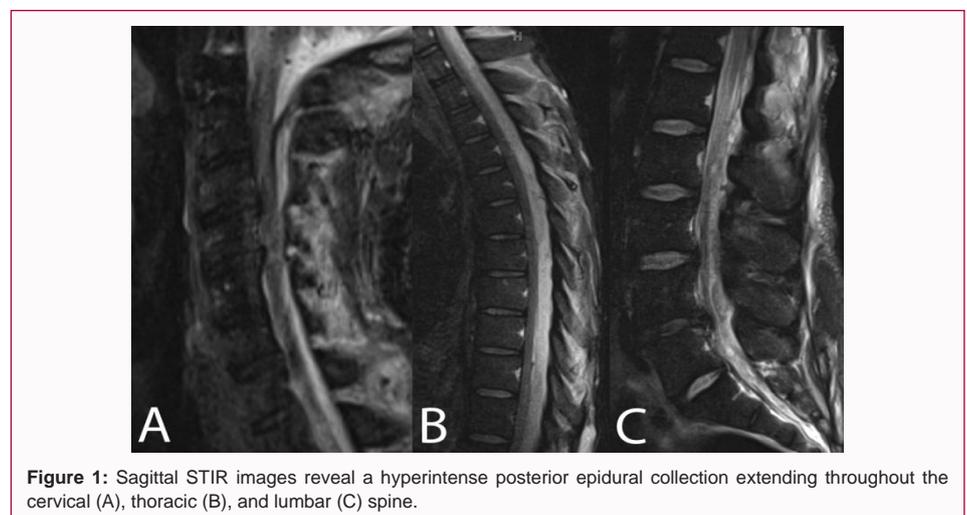


Figure 1: Sagittal STIR images reveal a hyperintense posterior epidural collection extending throughout the cervical (A), thoracic (B), and lumbar (C) spine.

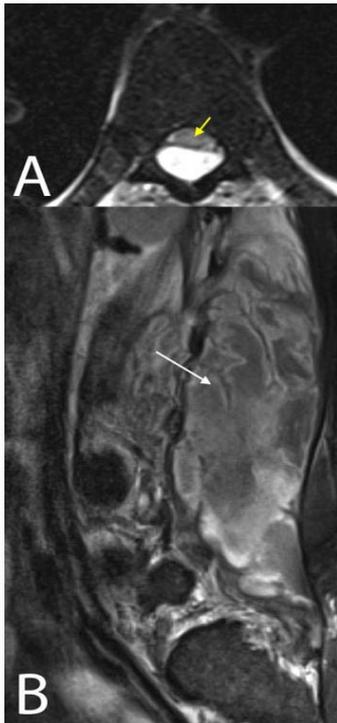


Figure 2: Axial T2-weighted imaging demonstrates cord compression by the posterior epidural collection with associated intramedullary increased T2 signal (A, yellow arrow). Sagittal T2-weighted imaging reveals large fluid collections within right paraspinal muscles consistent with soft tissue abscesses (B, white arrow).

potential impracticality of extensive multilevel laminectomies [1]. Reports of studies demonstrating similar results between combined medical and surgical therapy versus medical therapy alone have been described, albeit seldomly [4]. In one case, a patient with pan-SEA was successfully treated under medical therapy, with complete symptomatic resolution and no recurrence after one year [3]. Ultimately, the optimal treatment for SEAs is difficult to ascertain via prospective, randomized studies given the rare incidence and grave outcome of this infectious entity.

Consideration of less extensive surgical interventions may be an appropriate alternative in treating pan-SEA when confronted with the surgical-related morbidity of extensive multilevel laminectomies. Recent reports of minimally invasive techniques for the treatment of multilevel spinal epidural abscesses have been described. For example, minimally invasive tubular retractor microsurgery for the treatment of multilevel spinal epidural abscess resulted in favorable outcomes in three patients [5]. Catheterization and irrigation via a surgically-exposed posterior interlaminar approach for drainage of the abscess demonstrated complete recovery in 9 out of 10 patients [6].

Overall, when presented with the rare instance of a pan-SEA, minimally invasive or non-surgical management may be a reasonable consideration as an alternative to multilevel decompressive laminectomy.

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