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Huge extradural multilevel lumbar abscess. Case report

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ABSTRACT

Extensive spinal epidural abscesses (ESEAs), occupying three or more spinal regions, are rare forms of vertebral infection. Multilevel laminectomy in these cases is controversial because of the risk of vertebral instability. We report the case of a 47-year-old patient known with ureterohydronephrosis 2nd degree, admitted for severe vertebral pain (VAS 8/10) from 2 months, paraparesis (ASIA 1/5 left, 4/5 right, retention of urine and faeces) from three days. The analysis discovered Diabetes Mellitus type 2, and high levels of inflammatory tests. CT and MRI of the vertebral area with contrast revealed dorsal compression of the spinal cord and cauda equina by an epidural abscess extending from L1-L5, bilateral in the soft adjacent paravertebral tissues especially psoas muscles but sparing the intervertebral discs. Surgical treatment: alternate fenestrations L1-L5, more important on the left side. By this technique, we removed the fluid pus and also granulomatous pus from posterior epidural space L1-L5, bilateral medial foramina, interspinous and supraspinous space, and psoas muscles. The identified germ was Staphylococcus aureus ++++. Postoperatively, we used a continuous drainage washing system with Vancomicyne and diluted Betadine—a course of six-week Vancomycin 2 grams/day iv. The drainage system was blocked after 24 hours and we had to remove it and all the wires of the suture. We had to dress up every day for the surgical field and wash deep inside the field with diluted betadine for 3 weeks till the surgical field was completely cured. After 3 months postoperatively the patient was cured radiologically and clinically. Follow up 18 months. Conclusion: alternate fenestration has the advantages of removing liquid and granulomatous pus in the epidural posterior area and preserving the spine stability.

Keywords
extensive extradural lumbar abscess, alternate laminotomy

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INTRODUCTION

Spinal epidural abscess (SEAs) is defined as the accumulation of purulent contents in the epidural space of the spinal canal, causing spinal medullary and root ischemia via compression, resulting inpersistent neurological disorders[15]. Spinal epidural abscess is a rare[19] 0.2–2 per 10,000 hospitalized patients[1] . Extensive spinal epidural abscesses (ESEAs) occupying three or more spinal regions are extremelly rare and pose a therapeutic challenge as they have a higher mortality rate [1,2]. Patients with diabetes mellitus, acquired immunodeficiency syndrome, or who are under immunosuppressive

treatment after organ transplantation, drug addiction, alcoholism, cancer, and systemic inflammation or infection are more susceptible for contracting secondary epidural abscess [4,5]. The most common pathogen in both forms is Staphylococcus aureus, with methicillin resistant [9,10]. Most epidural abscesses are located at the thoracic or lumbar level [14].Performing multilevel laminectomies is controversial in cases of extensive SEA considering the long surgical time and mechanical instability [14].

CASE REPORT

We report the case of a 47-year old pacient known with ureterohydronephrosis 2-nd degree, admitted for severe vertebral pain (VAS 8/10) from 2 months, paraparesis (ASIA 1/5 left, 4/5 right, retention of urine and feces) from three days. Local exam: right lumbar paramedian subcutaneous collection, depressible, erythematous, warm, slightly painful to palpation. Analysis descovered diabetes melitus type 2, evidence of chronic renal failure, high levels of inflamatory tests, leukocytosis with neutrophilia and lymphopenia. Pus was evaluated by diagnostic puncture from the subcutaneous collection. The identified germ was Staphyloccocus aureus ++++.

CT and MRI of the vertebral area with contrast revealed dorsal compression of the spinal cord and cauda equina by an epidural abscess extending from L1-L5, bilateral in the soft adiacent paravertebral tisues especially psoas muscles but sparing the intervertebral disc.

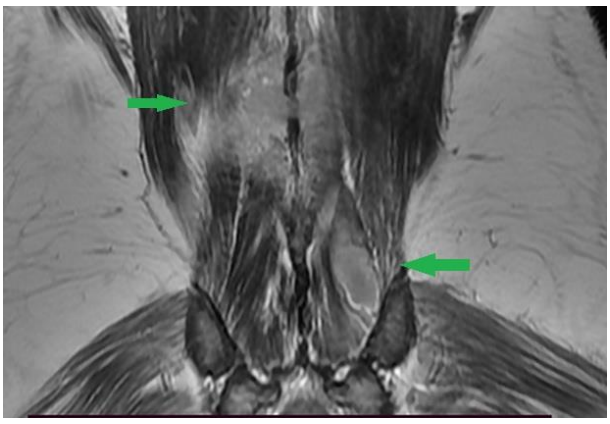

Figure 1. Lumbar vertebral with GD. Coronal view: pus in paravertebral and psoas muscle (Green arrows).

Combined surgical drainage and prolonged antibiotic therapy remain the ideal treatment. Surgical treatment and surgical target: Removal of the pus . Technical dilema: preserving of stability. For these reasons we choosed alternate fenestrations L1-L5, more important on the left side. By this technique we removed the ESEAs who consist in fluid pus and also granulomatous pus from posterior epidural space L1-L5, bilateral medial foramina , interspinous and suprasinos space, psoas muscles. And we preserved the stabillity.

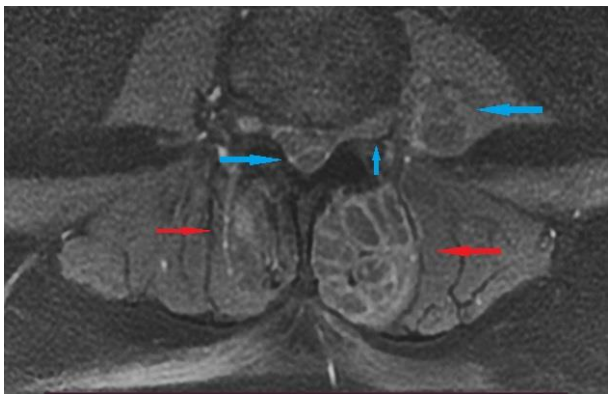

Figure 2. Lumbar vertebral with GD. Axial view: pus in psoas muscle, extraforaminal, foraminal and posterior central area (Blue arrows). Pus in paravertebral muscles, dominantly on the left side (Red arrows).

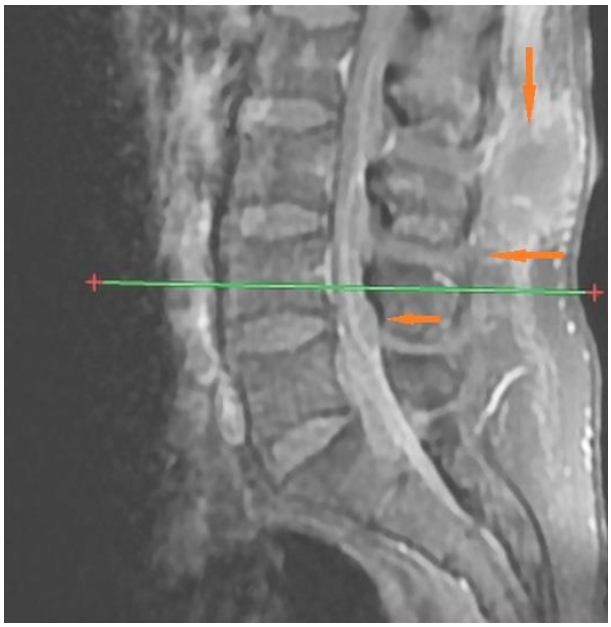

Figure 3. Lumbar vertebral with GD. Lateral view: pus in subcutaneous space, posterior extradural space, interspinous space (Orange arrows).

The abscess in the left psoas muscle who was previously punctured and partially drained by diagnostic subcutaneous puncture, was not

operated by surgeons. The patient was abundantlly washed intraoperativelly with oxygenated water, diluted Betadine solution, Rifampicin and Physiological serum. Postoperatively, a lavage-drainage inn and out system with Vancomicyne and diluted Betadine consisting of 4 nasogastric intubation tubes connected to sterile drainage bags was installed. A course of six-week therapy with Vancomycin 2 grams/day iv and Cipropfloxacine 4 weeks was administered. The drenage system was blocked after 24 hours and we had to remove it and all the wires of the suture. We had to dress up every day the surgical field and wash deep inside the field with diluted betadine 3 weeks till the surgical field was completelly cured. After 3 months posterativelly the patient was cured radiologically and clinically (the motor strength of both lower extremities improved (G5/G5), and she could walk without any assistance). Follow up at 18 months.

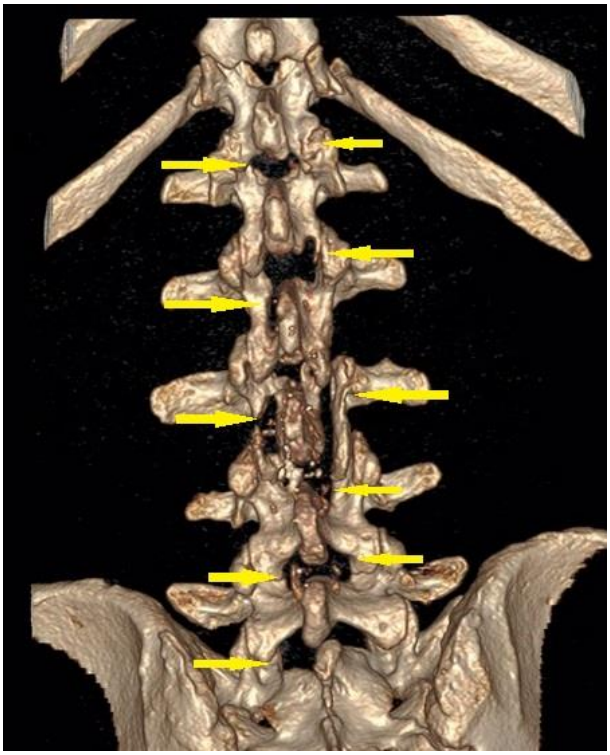

Figure 4. Postoperative vertebral Lumbar CT scan: alternate fenestrations L1-L5 (yellow arrows).

Discussion

ESEAs is an uncommon but severe infectious condition that may lead to significant neurological disability and death [11]. I[1]t classically manifests as a triad of fever, back pain, and progressive neurological deficits[11]. The route of infection is hematogenous spread of bacteria [3]. The incidence of ESEAs has increased,possibly because of the increase in the aging population; the prevalence of diabetes and the useof instrumentation, epidural catheters, and immunosuppressive therapy [3]. Prompt diagnosis and surgical drainage should be instituted because diagnostic delay is associated with poor outcomes and catastrophic consequences [3,12].

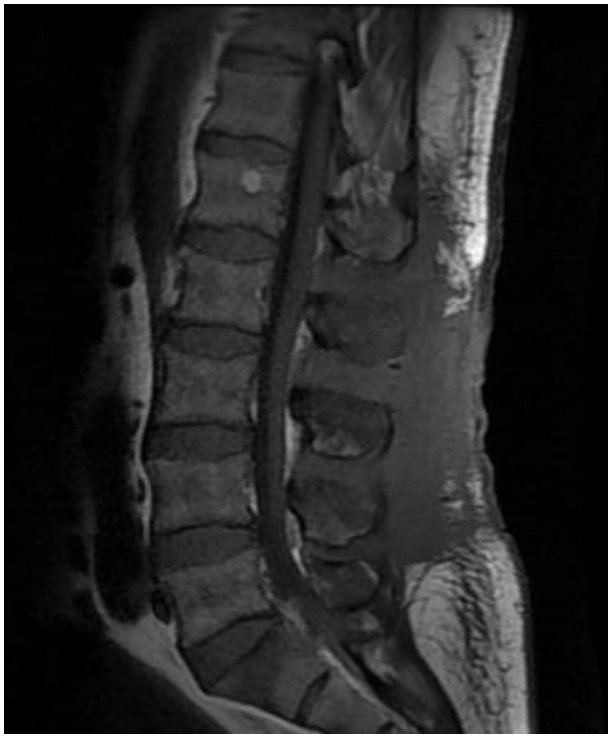

Figure 5. Postoperative vertebral Lumbar MRI with GD - lateral view: healing of the abscess.

The standard treatment for patients with an extensive ESEAs remains controversial. A successful case of conservative antibacterial treatment of holospinal SEA has been reported [8] In cases of extensive ESEAs involving multiple levels, spine surgeons hesitate to perform surgical decompression and drainage through multilevel laminectomies for patients with poor general conditions. These cases represent a treatment dilemma, especially for patients with medical comorbidities[3].

Performing multilevel laminectomies may predispose patients to complications such as increased blood loss, increased postoperative pain and recovery time, and late kyphotic deformity and iatrogenic instability [6,7]. Ran et a [13] introduced the

concepts of aspiration and irrigation of multilevel SEA bypercutaneous CT-guided needle aspiration. However, in clinical practice, CT-guided percutaneous drainage of SEA is not commonly performed due to technical difficulties; it is only indicated for a dorsally located SEA with a confirmed purely liquid component [3]. Surgical drainage should be promptly considered for patients with neurological deficits because of the limited time window for irreversible damage [3]. Most authors prefer surgical decompression and abscess drainage because the progression of infection is unpredictable even if appropriate antibiotic therapy is established, and severe neurological compromise can follow vascular involvement of the spinal cord [16] Some authors suggest that selective laminectomies at the rostral and caudal poles of the abscess with subsequent drainage[16.] .

Others have performed the so-called apical laminectomy at the midcervical C3/5 level, the midthoracic T6/9 level, and the midlumbar L2/3 spinal segments[16]. Various epidural space drainage catheter types have been used. A Fogarty catheter, a 5-Fr 2 pediatric feeding tube, and soft silicone catheters for drainage have been used [12,17]. In the case of progressive neurological deficit, most authors agree on surgical treatment for SEA [1,17]. It is difficult to establish the exact criteria for drainage method selection in an extensive SEA due to greatly varied SEA locations and the presence of coexisting diseases. Appropriate antibiotic treatment for 4–12 weeks is essential [1,17]

In our patient where the ESEAs without disc space involvement and without significant comorbidities we aprreciate that the most efficient surgical techynique consist in alternate laminectomies (partial revoval of laminaes , basis of spinous proceses, medial parts of posterior foraminae bilaterally but specially on the most affected side).

The final objectives are:

- removal of most most important parts of the abscess (fluid by aspiration and granulomatous with the curettes)
- preserving of stbillity
- make possible healling by antibiotic treatment for residual pus

Conclusion

Combined surgical drainage and prolonged antibiotic therapy remain the ideal treatment.

Alternate fenestration has the advantages of removal of liquid and granulomatous pus in epidural posterior area and preserve the spine stability. It is the the ideal solution for the stable patients with this kind of ESEAs

Abbreviations:
CT = computed tomography;
MRI = magnetic resonance imaging;
MRSA = methicillin-resistant Staphylococcus aureus;
SEA = Spinal epidural abscess;
ESEAs = Extensive spinal epidural abscess; VAS = visual analog scale.

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