International Journal of Research in Medical Sciences
Ali S. Int J Res Med Sci. 2017 Oct;5(10):4203-4205
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20174139

Review Article

Epidural abscess assessment and management

Shahnila Ali*

Northwest Center for Integrated Health Tacoma, WA, USA - 98406

Received: 22 August 2017
Accepted: 27 August 2017

***Correspondence:**
Dr. Shahnila Ali,
E-mail: shahnilaali90@hotmail.com

ABSTRACT

Epidural abscess is a medical emergency. Abscesses can expand to compress the brain or spinal cord and cause severe symptoms, perma-nent neurological deficits, or even death. Most spinal epidural abscesses begin as focal pyogenic infection involving the vertebral disc or junction between the disc and the vertebral body and as inflammation pro-gresses, abscess may extend longitudinally in the epidural space, and damage to the spinal cord can happen. Symptoms on presentation may include fever, malaise, back pain, motor weakness, sensory changes, bladder or bowel dysfunction, or paralysis. Most important diagnostic test is MRI because it is positive early in the course of the infection and pro-vides the best visualization of the location and extent of inflammatory changes. MRI with contrast should be performed as soon as possible. Treatment is both medical and surgical. Empirical antibiotic regimen can be vancomycin, metronidazole and third generation cephalosporin or vancomycin and piperacillin-tazobactam among other combinations. Fur-ther guidance by infectious work up. After diagnosis, neurosurgery con-sultation is taken immediately for surgical evaluation and management.

Keywords: Epidural abscess, ED (Emergency department), MRI (Magnetic resonance imaging)

INTRODUCTION

Epidural abscess is a rare but life-threatening infection. Abscesses can expand to compress the brain or spinal cord and cause severe symptoms, permanent neurological deficits, or even death. Prompt diagnosis and proper treatment is extremely important. There are two types of epidural abscess.[1]

- Spinal epidural abscess
- Intracranial epidural abscess

Types are based on anatomical locations.

Careful history intake is important as back pain is a common symptom and a history of recent or remote trauma, degenerative disc disease may mask the diagnosis of spinal epidural abscess.

Most epidural abscesses are located posteriorly in the thoracic or lumbar spine and they originate from a distant focus such as a skin infection, pharyngitis, or dental abscess. Anterior epidural abscesses are commonly associated with discitis or vertebral osteomyelitis. An important risk factor is trauma and mechanism is considered as trauma may result in the formation of a vertebral hematoma, which serves as a rich nutrient source for infection.[2]

DIAGNOSIS

Diagnosis of epidural abscess must be made promptly as delay in treatment can result in irreversible neurologic damage or death. Worsening and progression of neurologic deficit varies from few hours to several months. Presentation of spinal epidural abscess is usually nonspecific with fever, malaise, and back pain being

early symptoms.[3] Local tenderness, with or without neurologic deficit, is the usual physical finding, and leukocytosis, elevated inflammatory markers like ESR may be the only abnormal laboratory finding. Epidural abscess should be suspected in patients presenting with fever and back pain, especially if they have risk factors.[4]

This article reviews spinal epidural abscess. Most spinal epidural abscesses begin as focal pyogenic infection involving the vertebral disc or junction between the disc and the vertebral body and as inflammation progresses, abscess may extend longitudinally in the epidural space, and damage to the spinal cord can happen. Patients may have delay in presentation to ED with symptoms being present for seven days or more, and may have multiple sites of pyogenic inoculation. Spinal epidural abscess can affect patients of all ages however most patients have ages is between 30 and 60 years old.[5]

Risk factors include epidural catheter placement (operative or non-operative analgesia), however, risk significantly decreases if catheter is placed for shorter duration. Other risk factors include para spinal injections of steroids or analgesia, DM, hemodialysis, alcoholism, HIV infection, trauma, tattooing or acupuncture, IV drug abuse, bacteremia or surrounding bony / soft tissue infection. Most common causative bacteria were *Staphylococcus, Streptococci,* coagulase negative *Staphylococci, Anaerobes.* Approximately, one-third of patients with have no identifiable source for the infection. Most common sites of origin are infections of skin and soft tissues and complications of spinal surgery or other invasive procedures, including epidural catheters.[6]

Symptoms on presentation may include fever, malaise, back pain, motor weakness, sensory changes, bladder or bowel dysfunction, or paralysis. The initial manifestations of spinal epidural abscess (SEA) are often nonspecific and include such signs and symptoms as fever and malaise.[7] The classical diagnostic triad consists of fever, spinal pain, and neurologic deficits. Interestingly, extreme variants of presentation may be present including no fever.[8]

Back pain is usually localized to the midline, with marked tenderness to percussion of the spinous process. Detailed physical examination is pivotal for accurate diagnosis and thorough neurological examination should be undertaken, careful evaluation for any sensory and motor deficits, saddle anesthesia and diminished anal sphincter tone.

Diagnostic tests include ESR which for some reason appears to a better diagnostic test then CRP. CBC can be useful as it would in any infection. Most important diagnostic test is MRI because it is positive early in the course of the infection and provides the best visualization of the location and extent of inflammatory changes. MRI with contrast should be performed as soon as possible. Consideration should be given and my personal recommendation is to imaging the entire spinal column even when patients have focal signs or symptoms in one region because multiple skip lesions are common and patients may not have pain or tenderness in all of the affected areas. If unable to obtain MRI, CT myelogram can be used. CT with IV contrast can be considered as myelogram is not common anymore but it may not distinguish early infectious findings from other changes involving the soft tissues, discs, or vertebrae.[9]

Treatment is both medical and surgical. Empirical antibiotic regimen can be vancomycin, metronidazole and third generation cephalosporin or vancomycin and piperacillin-tazobactam among other combinations. Further guidance by infectious work up.[10] After diagnosis, neurosurgery consultation is taken immediately. Based on patient's presentation (location, neurologic deficit, abscess vs phlegmon on imaging) and neurosurgery evaluation, patient may need debridement of infected tissues and decompressive laminectomy. CT guided needle aspiration (IR consult) in combination to antibiotics can be employed for patients with posterior spinal epidural abscess, lack of neurologic deficit, high surgical risk, and no response to antibiotics alone.[11]

Use of MRI has led to early diagnosis of abscess and is extremely helpful. Surgical decompression and drainage with systemic antibiotic therapy is treatment of choice especially if patients have neurologic deficits, worsening of disease while on antibiotics. Having said that, in many situations, medical treatment alone may be chosen like those who have multiple co morbidities, malignancy with poor prognosis, and if patients have advanced neurological deficits of more than 48 hours as they are unlikely to improve with surgery. Cases have also been reported where patients received IR guided diagnostic aspiration and systemic antibiotics. However, these cases must be carefully chosen and should not have any neurologic deficit or large abscess at time of diagnosis. Immediate neurosurgery evaluation should be undertaken even if patients do not have any neurological deficits.[12]

DISCUSSION

Epidural abscess is a medical emergency and should be diagnosed and treated as soon as possible. It may present with nonspecific complaints including fever, malaise, back pain among others. Patients may present with neurological deficits like focal weakness, bladder or bowel incontinence which indicates advanced condition. If not promptly diagnosed and treated, may lead to permanent neurological damage like paralysis.[13]

Surgical decompression and drainage with systemic antibiotic therapy is treatment of choice especially if patients have neurologic deficits, worsening of disease while on antibiotics. Cases have also been reported where patients received IR guided diagnostic aspiration and systemic antibiotics. However, these cases must be

carefully chosen and should not have any neurologic deficit or large abscess at time of diagnosis.[14]

Poor prognosis is based on multiple factors including delay in diagnosis, incorrect empirical regimen, presence of neurological deficits at time of diagnosis. Longer the duration of symptoms like paralysis, bowel or bladder incontinence, worse the prognosis. Most common differentials and misdiagnosis include vertebral osteomyelitis, disc prolapse, meningitis. Lumbar puncture which is the mainstay of diagnosis for meningitis is contraindicated in spinal epidural abscess. Localized back tenderness and risk factors should lead to suspicion of spinal epidural abscess. Based on cases review, better prognosis is associated with lumbosacral region abscess likely due to less nerve root compression in this location.[14]

CONCLUSION

Based on review of available literature, it is recommended to have high suspicion of epidural abscess if patients have risk factors include epidural catheter placement, however, risk significantly decreases if catheter is placed for shorter duration. Other risk factors include para spinal injections of steroids or analgesia, DM, hemodialysis, alcoholism, HIV infection, trauma, IV drug abuse, bacteremia or surrounding bony or soft tissue infection. Investigation of choice is MRI with contrast. Consideration should be given to image the entire spinal column even when patients have focal signs or symptoms in one region because multiple skip lesions are common and patients may not have pain or tenderness in all of the affected areas. Medical management as well as Neurosurgical consult / Intervention are standards of care.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Darouiche RO. Spinal epidural abscess. N Engl J Med. 2006;355(19):2012-20.
2. Strine TW, Hootman JM. US national prevalence and correlates of low back and neck pain among adults. Arthritis Rheum. 2007;57:656.
3. Deyo RA, Rainville J, Kent DL. What can the history and physical ex-amination tell us about low back pain?. JAMA. 1992;268(6):760.
4. Davis DP, Wold RM, Patel RJ. The clinical presentation and impact of diagnostic delays on emergency department patients with spinal epidural abscess. J Emerg Med. 2004;26:285-91.
5. Chao D, Nanda A. Spinal epidural abscess: a diagnostic challenge. Am Fam Physician. 2002;65:1341-6.
6. Gosavi C, Bland D, Poddar R, Horst C. Epidural abscess complicating insertion of epidural catheters. Br J Anaesth. 2004;92:294.
7. Gaul C, Neundörfer B, Winterholler M. Iatrogenic (para-) spinal ab-scesses and meningitis following injection therapy for low back pain. Pain. 2005;116:407.
8. Tompkins M, Panuncialman I, Lucas P, et al. Spinal epidural abscess. J Emerg Med. 2010;39:384-90.
9. Krishnamohan P, Berger JR. Spinal epidural abscess. Curr Infect Dis Rep. 2014;16:436.
10. Sendi P, Bregenzer T, Zimmerli W. Spinal epidural abscess in clinical practice. QJM. 2008;101:1.
11. Rigamonti D, Liem L, Wolf AL. Epidural abscess in the cervical spine. Mt Sinai J Med. 1994;61:357.
12. Chen WC, Wang JL, Wang JT. Spinal epidural abscess due to Staphylococcus aureus: clinical manifestations and outcomes. J Micro-biol Immunol Infect. 2008;41:215.
13. Holt HM, Andersen SS, Andersen O. Infections following epidural catheterization. J Hosp Infect. 1995;30:253.
14. Phillips JM, Stedeford JC, Hartsilver E, Roberts C. Epidural abscess complicating insertion of epidural catheters. Br J Anaesth. 2002;89:778.

Cite this article as: Ali S. Epidural abscess assessment and management. Int J Res Med Sci 2017;5:4203-5.