Cervical Spondylodiscitis with Epidural and Paraspinal Abscess: case report and literature review

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ABSTRACT

Introduction: Spinal epidural abscess (SEA) was first described in 1761 by Giovanni Morgagni as a suppurative central nervous system infection involving the space between the spinal dura and vertebral periosteum. Case presentation: We report a 39 years old female patient. The patient had Methicillin-resistant Staphylococcus aureus (MRSA) and is Hepatitis C positive. She was diagnosed with osteomyelitis at C6-C7 with prevertebral and posterior paraspinal abscesses with associated vertebral collapse and cervical kyphosis at the C6-C7 level. She is IV illicit drug abuser. She presented with SEA, which is not as common as other nervous system infections. Discussion: Illicit intravenous drug use is a fairly common problem, and it leads to life threatening infections in many patients who end up admitted to hospitals. Common presenting features include bacteremia, endocarditis, osteomyelitis and discitis with epidural abscess, myositis with abscess and chronic virus infections as Hepatitis B, C and HIV. Conclusion: Illicit drug use can lead to life threatening infections; our patient demonstrated the economic burden of treating infections related to illicit IV drug use. The surgical management corrected the severe kyphotic deformity in our patient.

Keywords: Spinal epidural abscess; Osteomyelitis; Kyphotic deformity; Intravenous illicit drugs

RESUMO

Introdução: O abscesso epidural espinhal (AEE) foi descrito pela primeira vez em 1761 por Giovanni Morgagni como uma infecção supurativa do sistema nervoso central envolvendo o espaço entre a dura-máter espinhal e o periostóe vertebral. Relato do caso: Paciente do sexo feminino, 39 anos, portadora de Staphylococcus aureus resistente à meticilina (MRSA) e positiva para hepatite C. Diagnosticada com osteomielite em C6-C7 com abscessos pré-vertebrais e paravespinhais posteriores com colapso vertebral associado e cifose cervical no nível de C6-C7. Usuária de drogas ilícitas. Apresentou AEE, caso não tão comum quanto as outras infecções do sistema nervoso. Discussão: O uso de drogas intravenosas ilícitas é um problema bastante comum e leva a infecções com risco de vida em muitos pacientes que acabam internados em hospitais. Características comuns de apresentação incluem bacteremia, endocardite, osteomielite e discite...
INTRODUCTION

Spinal epidural abscess (SEA) was first described in 1761 by Giovanni Morgagni\(^1,2\) as a suppurative central nervous system infection involving the space between the spinal dura and vertebral periosteum. It classically presents with midline back pain, fever, and neurologic deficits, but none of those are mandatory symptoms, thus making it difficult to diagnose and requiring a high index of suspicion. The advent of modern imaging techniques has immensely aided the diagnosis and management of this disease, but because symptoms can be nonspecific, patients are often examined by multiple physicians before they receive a diagnosis. Prompt diagnosis is key, since treatment delay may lead to irreversible neurological damage.

SEA is not as common as other nervous system infections. Its incidence is approximately 0.0002% of hospital admissions in the United States of America\(^2,3\).

Nevertheless, it is important to note that incidence of SEA has increased due to population aging and rising rates of intravenous illicit drug use. Other risk factors for developing spinal epidural abscess include use of immunosuppressant drugs, invasive spine procedures and diabetes mellitus\(^4,5\).

Treatment may include antibiotics and surgery to drain the abscess, collect material for microbial culture and stabilize the spine.

CASE PRESENTATION

We report a 39 years old female patient. She had Methicillin-resistant Staphylococcus aureus (MRSA) and was Hepatitis C positive. The patient also had gastroesophageal reflux disease and systemic hypertension.

She was admitted on January 10th, 2023 due to C6-C7 kyphotic deformity secondary to vertebral osteomyelitis and spondylodiscitis complicating illicit intravenous drug use. She had pyrexia, upper back and neck pain radiating to both arms.

The patient had a long history of illicit intravenous (IV) drug use. In June of the previous year, she was admitted to the hospital because of sepsis. Blood cultures and sputum were positive for MRSA. She had severe generalized pain and respiratory compromise necessitating intubation and ventilation. A MRI scan was executed which confirmed the presence of paraspinal abscesses in the cervical region at C5-C7 as well as in the epidural space at the same level. Surgery was performed to drain the abscesses and also to obtain material for culture and sensitivity. She was treated with intravenous vancomycin for six weeks and discharged home.

In August of that year, she was admitted a second time due to a destructive C6-C7 lesion caused by Staphylococcus aureus that was methicillin resistant. This infection was probably caused by the recurrent use of illicit IV drugs after she went home.

The patient was diagnosed with osteomyelitis at C6-C7 with prevertebral and posterior paraspinal abscesses with associated vertebral collapse and cervical kyphosis at the C6-C7 level (Figure 1).

She received IV Vancomycin again and an Aspen collar. An attempt at surgery to decompress and stabilize the spine failed due to excessive prevertebral soft tissue swelling which made it impossible to access the anterior vertebral column. The patient was kept on IV antibiotics through a central venous line in the hospital for 8 weeks. The hospitalization was indicated to reduce the risk of illicit IV drugs use through the central line.

The patient was readmitted to the neurosurgical unit on January 10th, 2023. As the infection was under control, the swelling was
no longer present, allowing the surgery to be made. As final treatment, she underwent a C6-C7 corpectomy and adjacent discectomy plus C5-T1 interbody fusion using a Capri cage (Stryker, USA), Grafton™ paste (Medtronic, Minneapolis, USA) plus Orzak plate (Stryker, Portage, USA). A posterior C6-C7 decompressive laminectomy and lateral screw fixation, C4-C5, TI-T2 pedicle screw rod instrumentation were also executed (Figures 2 and 3). Unfortunately, there are no post-op images or histopathology to be presented here.

**DISCUSSION**

Illicit intravenous drug use is a fairly common problem, and it leads to life-threatening infections in many patients who end
Pereira MG, Aguiar PHSP, Vasques MSM, Cavalcanti VB, Aguiar PHP, Buwembo 
J - Cervical Spondylodiscitis with Epidural and Paraspinal Abscess: case report and 
literature review

up admitted to hospitals. Common presenting features include bacteremia, endocarditis, osteomyelitis and discitis with epidural abscess, myositis with abscess and chronic virus infections as Hepatitis B, C and HIV6,7.

For spine related infections, many patients present with various degrees of neurological deficit including myelopathy with quadriaparesis or paraparesis, and cauda equina syndrome. Patients may require intensive care for weeks, and subsequently convalescent unit care or rehabilitation centers. Prolonged use of antibiotic therapy is necessary to control the infections, necessitating insertion of central venous access lines. It is risky to discharge such patients with an intravenous line back to the community, since they are likely going to use it for illicit drug administration, so they may require hospitalization for the duration of the antibiotic course7,8.

Although facilities have been established in some centers in various countries for safe needle distribution, there is still a problem of fear of the law because of possession of illicit substances and drug trafficking, which causes many of the users to avoid the public safe needle stations8.

This problem is a big social burden as it is very costly to treat and rehabilitate the affected individuals. Many of the users have an addiction problem and require specialized interventions for rehabilitation8,10.

Our patient exhibited various manifestations of bacterial infections including bacteremia, endocarditis, pneumonia, myositis with abscess spondylodiscitis with epidural abscess and also spine deformity. She also required prolonged hospitalization in order to treat her infection. All recommendations about quitting illicit drug abuse was made for this patient, including talks about her currently state and further possible complications. The hospital care will be following up her, but now all the cares are being followed for government housing care.

Besides individual health risks, extended hospitalization also requires higher assistance and costs to public health11,12.

It is undeniable that infections in intravenous drug users can be challenging to manage. With the right medical approach, though, they can be resolved without further complications.

With that in mind, it is essential that healthcare workers be alert with possible signs and statistics of infections caused by the use of intravenous drug, knowing how to effectively identify and treat them correctly as quickly as possible. That way, damage resulting from complications can be minimized.

CONCLUSION

The illicit drug use can lead to life-threatening infections and our patient demonstrated the economic burden of treating infections related to illicit IV drug use. Surgical management corrected the severe kyphotic deformity in our patient but guidance about the problems involving illegal drug abuse should be given to all patients included in this scope.

REFERENCES


Case Report

Pereira MG, Aguiar PHSP, Vasques MSM, Cavalcanti VB, Aguiar PHP, Buwembo J - Cervical Spondylodiscitis with Epidural and Paraspinal Abscess: case report and literature review


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Funding: nothing to disclose.
Conflicts of interest: nothing to disclose.
Institution: Saskatchewan Health Hospitals, Regina and Saskatoon - SK- Canada.