Vertebral Osteomyelitis and Discitis Secondary to Streptococcus Agalactiae

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Abstract
Streptococcus agalactiae is a group B beta-hemolytic Gram-positive streptococcus that is a well-known pathogen related to postpartum infection and neonatal sepsis. It is a part of the healthy bacterial flora in the vagina and the rectum in women. It factors predispose patients to group B streptococcal infection include cardiovascular and genitourinary abnormalities. Diabetes is also commonly associated with group B streptococcal infections. Although it is not commonly seen in healthy nonpregnant adults, group B streptococcal infections can also manifest in soft-tissue infections, arthritides, and osteomyelitis. Vertebral osteomyelitis is an inherently rare bone infection, attributing to only 2-4% of all cases of osteomyelitis and mostly reported in young children and older adults. Staphylococcus aureus is the most common microorganism associated with vertebral osteomyelitis, followed by Escherichia coli. Vertebral osteomyelitis due to group B streptococcus has been reported in recent years it has been described as an emerging pathogen in adults outside of the gestational and perinatal period. In the last decade, recent case reviews have shown an increase in the incidence of streptococcal vertebral osteomyelitis which may suggest a new epidemiological scenario. Treatment of vertebral osteomyelitis depends on the severity of the infection, ranging from the introduction of intravenous antibiotics to surgical interventions, such as debridement followed by fusion. We present a case of vertebral osteomyelitis and discitis, with positive growth of streptococcus agalactiae from bone marrow, in a 66-year-old Asian male with a history of nasal carcinoma, diabetes mellitus, and recent spinal acupunture treatment. This case study demonstrates the emerging variety of uncommon infectious etiologies of osteomyelitis as well as potential routes of infection not typically seen in the US.

Case Presentation
TT is a 66-year-old Asian male who came to the family medicine clinic with a chief complaint of low back pain. He stated that the pain was located in his lower lumbar spine and radiated to the left poster and anterior thigh, which he characterized as constant, moderate in intensity, sharp, and burning. He reported that the pain started 2 months ago when he took a mist step going down a set of stairs while he was in Thailand. Bending, lying down, and walking exacerbates the symptoms. He recalled receiving prior acupuncture treatments in Thailand. He sought treatment in Thailand, where he received an MRI that showed evidence of spondylodiscitis at L3-L4. Patient returned to the United States to seek medical care. Patient denied chills, fever, night sweats, fatigue, chest pain, dyspnea, abdominal pain, or loss of sensation or motor function.

Past medical history was significant for nasal carcinoma with migration to adjacent lymph nodes treated with radiation and lymph node removal 20 years ago, peptic ulcer disease, hypertension, and dyslipidemia. He was a former smoker for 30 years ago for 12 years, 2 packs per week; he was also a former heavy drinker of 30 years ago for roughly 10 years. His family history was significant for diabetes and stomach cancer from his maternal side. His only medications were Lisinopril and a cholesterol medication from Thailand with no known drug allergies.

Upon visit, patient was 5’7”, 167 lbs, BMI of 25.8, had a temperature of 97.5F, blood pressure of 155/90 mmHg, pulse of 80 BPM, and a respiratory rate of 18 BPM. Physical examination was significant for edema over the left and right lumbar paraspinal muscles. The pain elicited over the L3 and L4 spinous processes. There was limited active range of motion with extension and flexion due to patient’s significant pain. No skin ulcerations, lesions, or rashes were noticed on the back. No gross neurological deficits were noted on the lower extremities, and cardiovascular and respiratory examinations were unremarkable. Orthopedic surgery was consulted, and the patient was recommended to go to the ER and was subsequently admitted for care and evaluation.

Course of Hospitalization
An MRI with and without contrast done at Mountain Vista Medical Center showed L3-4 discitis with extension of inflammatory process into the peridiscal tissue including the posterior epidural space, suggesting a component of osteomyelitis (Figure 1). Culture from a bone biopsy showed moderate growth of pan-susceptible streptococcus agalactiae. Pathology report of the bone biopsy showed only blood clots. Blood and urine cultures showed no growth. Echocardiogram showed no evidence of vegetation and nor mitral or aortic valve regurgitation. Patient was placed on IV Rocephin and physical therapy. Patient was counseled about future operative intervention, which he declined at that time. He was discharged with a PICC line to continue his antibiotic regimen. Patient was seen again at the family medicine clinic, where his antibiotics was switched to Ivacn.

Discussion and Conclusion
Vertebral osteomyelitis is typically suspected on clinical presentation or with abnormal radiographic findings. Symptoms usually consist of focal tenderness to light percussion and reduced back mobility. Fever is an inconsistent finding, with only 1-2 cases out of 28 reported. Elevated erythrocyte sedimentation rate is seen in 80% of cases. Magnetic resonance imaging (MRI) is the most sensitive radiologic technique to detect vertebral osteomyelitis. Blood cultures are positive in up to 50% of patients. CT-guided bone biopsy is generally done to confirm the clinical or radiological suspicion.

Medical treatment starts with parenteral antimicrobial therapy. Early treatment lowers the risk of soft tissue extension, abscesses, cord compression, and potentially paraplegia. The type of antibiotic medication to use is based on blood or biopsy culture results. Vertebral osteomyelitis requires extensive therapy, so it is recommended to withhold therapy until cultures return in stable patients. Pre-biopsy antibiotic regimen does not diminish the yield of bone biopsy culture results, and a 6 week treatment is not inferior to 12 week treatments. Surgery is warranted if the disease progresses despite adequate antimicrobial therapy, cord compression, spinal instability, or evidence of epidural or paravertebral abscesses. Routine follow-up imaging is useful in patients whose clinical status have worsen at the end of antimicrobial therapy. The most serious complication of vertebral osteomyelitis is neurologic impairment secondary to either abscess formation or vertebral collapse.

GBS osteomyelitis typically occurs by contiguous spread from an existing infection or direct inoculation. Nevertheless, diagnostic and treatment workup is identical with other microbial etiologies. Complementary and integrative medicine such as acupuncture has grown in popularity in the United States, with 3.4 million uses in 2012. As with all procedures, acupuncture has its risks and potential complications. Incidence of mild adverse effects ranges from 6.71-15.5%, whereas serious adverse events is about 0.024%. Practice guidelines on Clean Needle Technique (CNT) appeared to play a critical role in minimizing the number of adverse effects.

This case illustrates a unique scenario of a typical vertebral osteomyelitis presentation with an atypical mycobacterial etiology and prior history. Nevertheless, the diagnostic and treatment approach does not deviate from the accepted standard. It also offers an opportunity for clinicians to educate patients of potential risks when seeking acupuncture therapy as well as to better prepare for possible complications.

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Reference

Image 1: Sputum and blood cultures grew Streptococcus agalactiae from both L3 and L4. No urine was done due to the central cord along with anterior meningitis into the peridiscal tissue.