H54 Disseminated Miliary Staphylococcal Infection: A Case of Pyomyositis and Bacterial Myocarditis in a Prisoner

Ariana Pape, BA, Norfolk, VA 23508; Wendy M. Gunther, MD, Office of the Chief Medical Examiner, Tidewater District, Norfolk, VA 23510-1046*

Learning Overview: After attending this presentation, attendees will be able to: (1) recognize the signs and symptoms of disseminated staphylococcal infection, (2) differentiate bacterial from fungal meningitis, and (3) familiarize themselves with the tissues most likely to be invaded by disseminated staphylococcus aureus.

Impact on the Forensic Science Community: This presentation will impact attendees by: (1) increasing clinical suspicion of disseminated pyomyositis in severe sepsis of unclear source, and (2) suggest alternate testing beyond routine culture and radiology, such as investigation of the heart and skeletal muscle by biopsy, ultrasound, and magnetic resonance imaging.

Fatalities due to disseminated staphylococcal infection are relatively rare. Most staphylococcal infections do not disseminate and are focused in a specific area of the body. Here is reported a case of a 39-year-old male prisoner who died of disseminated miliary staphylococcal infection. He had a history of chronic drug addiction with repeated overdoses and had previously been treated in the hospital for an overdose two months before imprisonment. He became ill in jail after the first ten days of imprisonment, spent three days in the medical isolation ward, and was transferred to the hospital for lethargy, confusion, and tachycardia with decreasing blood pressure. After a negative drug screen, the differential diagnosis on admission was focused on severe sepsis of unclear origin. Meningitis was suspected to be due to cryptococcal infection, due to a positive India ink test, but that was later ruled out due to antigen testing. He was also diagnosed with a urinary tract infection, sepsis, and pneumonia, all due to methicillin-resistant *Staphylococcus aureus*. He died in the hospital before the origin of the meningitis was able to be determined.

On autopsy, external examination showed petechial hemorrhages and severe jaundice. The petechial hemorrhages were in the sclerae, oral mucosa, and skin and corresponded to a markedly reduced platelet count due to diffuse intravascular coagulation. Internal examination identified disseminated pustules in a miliary pattern throughout skeletal muscle and the myocardium, along with bilateral consolidated pneumonia, hepatomegaly, splenomegaly, and splenic infarcts. The disseminated miliary pustules were found in the pectoral, abdominal, and strap muscles, myocardium, lungs, tongue, and jejunal wall. Several of the pustules had abscess cavities, and the lungs were the most severely affected. The Cerebrospinal Fluid (CSF) gram stain demonstrated innumerable gram-positive cocci without fungal organisms; multiple blood and urine cultures grew *Staphylococcus aureus*. The cause of death was determined to be disseminated miliary staphylococcal infection despite appropriate antibiotic therapy.

The literature includes one report of eight autopsy cases of fatal pyomyositis due to *Staphylococcus aureus* infection.[1] Six out of the eight cases involved recent trauma to the area of infection, and the pustules were most frequently found in the trunk, shoulder girdle, and thigh muscles. Besides the pyomyositis, cirrhosis and fatty liver were the most frequent autopsy finding, and death was due to sepsis in all cases. This case confirmed the skeletal muscle pattern of pyomyositis and adds cardiac involvement; there was no recent trauma. A second case report on *Staphylococcus aureus* myocarditis, reporting a 44-year-old male on methotrexate who was diagnosed with *Staphylococcus aureus* myocarditis associated with a left ventricular apical thrombus, noted that it is seen most frequently in immunocompromised persons.[2] That patient was treated with antibiotics and made a complete recovery. The case presented here was reportedly HIV negative and had no known immunosuppression; his disseminated miliary staphylococcal infection with pyomyositis and cardiac involvement was not suspected prior to autopsy.

Reference(s):

1. Schalinski, S. and Tsokos, M. (2008). Fatal Pyomyositis. *The American Journal of Forensic Medicine and Pathology*, 29(2), pp.131-135.
2. Mcgee, Michael, Emily Shiel, Stephen Brienesse, Stuart Murch, Robert Pickles, and James Leitch. *Staphylococcus Aureus* Myocarditis with Associated Left Ventricular Apical Thrombus. *Case Reports in Cardiology*, 2018 (May 23, 2018): 1-4. doi:10.1155/2018/7017286.

Pyomyositis, Bacterial Myocarditis, Disseminated Infection