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CLINICAL VIGNETTE

Spontaneous Pyomyositis

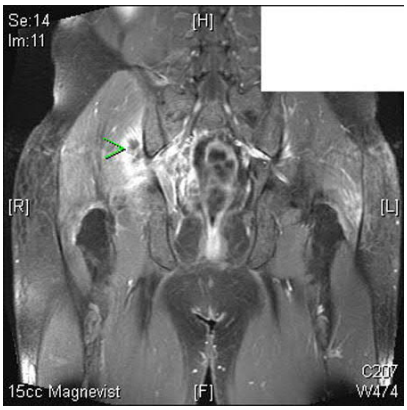
Amy Metzger, MD, Michael Pfeffer, MD, FACP
Department of Medicine, David Geffen School of Medicine at UCLA

Pyomyositis is a severe purulent infection of skeletal muscle that can arise from very minor wounds or abrasions, with transient bacteremia and subsequent muscle seeding. A high degree of suspicion is needed as the trauma to the skin is minimal and systemic symptoms of sepsis are present.

Case Report

A 44-year-old male presented to the Emergency Department with severe low back pain radiating to his right buttock and down his lateral upper thigh that had grown steadily worse over the previous two days. His pain was severe and paroxysmal, described as an electric and burning sensation. A thorough skin examination did not reveal any lesions or wounds. Peripheral pulses were present bilaterally, with no edema, and there was no tenderness on palpation of the right hip, buttock or thigh. He denied any heavy lifting, traumatic episodes, insect bites, illicit drug use, weakness or fevers. He had no significant past medical history. However, during his initial evaluation, he developed an abrupt fever to 103.3F. His initially normal CK level rose to 1518, and his white blood cell count was 15,000 with 85% neutrophils. Lumbar puncture was performed after negative head CT and showed an opening pressure of 22 and a normal cell count, protein, and glucose. A CT KUB without contrast was read as negative for ureterolithiasis but did show bilateral stranding in the perinephric regions. Due to continued severe radicular pain, a MRI lumbar spine was performed and was normal from T12 to S1. The patient was admitted to medicine for observation, and blood cultures returned positive for *Staphylococcus aureus* in 8/8 bottles. The patient was started on parenteral Vancomycin, however, the next day the severe pain became more localized to the right buttock with newly-observed swelling. Ultrasound of the right buttock was negative for fluid collections, and an x-ray of the pelvis and thigh were negative for gas. Due to continued suspicion for a soft tissue infectious process, a MRI with contrast of the pelvis and thigh showed myositis of the right gluteus and piriformis muscles [Figure 1]. Infectious disease consultation confirmed the diagnosis of spontaneous pyomyositis. No predisposing immunocompromised condition could be found. The patient was eventually discharged home with a 6-week course of oxacillin- after negative blood cultures, an unremarkable transesophageal echocardiogram, and several days of parenteral pain control.

Figure 1. MRI with contrast showing myositis of the right gluteus minimus, medius and piriformis muscles.



Discussion

This case illustrates the potential spontaneity of pyomyositis, which can begin with very minor trauma, often not remembered by the patient. It is not contiguously spread, but instead is believed to result from transient bacteremia leading to muscle/deep tissue deposition of bacteria[1]. This purulent muscle infection is usually seen in otherwise healthy people in the tropics. Its prevalence is increasing in temperate regions, however, such as the U.S[1]. In the U.S., pyomyositis primarily affects immuno-compromised adults, but no identifiable condition could be found in our patient[1-5].

Predisposing conditions include, diabetes, malignancy, HIV, cirrhosis, chronic kidney disease,

immuno-suppressants, trauma, vigorous exercise, intravenous drug use (due to bacteremia, not local spread), and concurrent skin infection. The infection usually involves the lower extremities and the pelvic girdle, and there are several predictable disease stages[1]. Delays in diagnosis are the norm, as the infection often involves deep muscle beds with very little to no cutaneous findings initially. The first stage is characterized by local muscle pain, swelling, and fever. The second stage occurs 2-3 weeks after initial symptoms, and by this stage a discrete abscess and marked leukocytosis are usually present. Ninety percent of patients present at this stage. The third stage is marked by systemic toxicity and often complications of the usual pathogen – *Staphylococcus aureus* bacteremia[1,4]. Mortality can be as high as 10%[6]. Rhabdomyolysis has been described, but CK levels are often normal despite muscle inflammation[7]. Up to 90% of cases involve *Staphylococcus aureus,* and the clinical sequelae of staphylococcal bacteremia. However, other reports have described streptococci, *e coli*, *tuberculosis*, *salmonella*, and polymicrobial infections[1]. As discrete abscesses are not often palpable, especially in the first stages of disease, the diagnosis necessitates heightened suspicion and radiography. MRI or CT with contrast are the diagnostic tests of choice [1,8-9]. Treatment includes 4-6 weeks of parenteral antibiotic therapy directed against staphylococcus and streptococcus and may require percutaneous or surgical drainage of deep muscle bed necrosis[4]. Follow up imaging to demonstrate resolution of the muscle abscess is recommended, and the prognosis is good when the diagnosis is made early (first or second stage). Full recovery is usually made[7].

Table 1. Predisposing conditions for pyomyositis

Type	**Condition**
Acute	Trauma
Chronic	Diabetes, Malignancy, Cirrhosis, Chronic Kidney Disease, Immunosuppression
Behavioral	Intravenous Drug Use (due to bacteremia), Vigorous exercise
Infectious	Concurrent skin infection, HIV infection

Conclusion

Bacterial pyomyositis is a hematogenously spread purulent infection of the muscle bed. It is most common in tropical climates but has been increasingly recognized in temperate regions, where methicillin-resistant staphylococci has become more common. Immunodeficiency is a well-recognized risk factor for the condition, but not required as evidenced by our otherwise healthy middle-aged male patient. Patients usually present at more advanced stages, and after CT or MRI for diagnosis, often require both antibiotics and surgical drainage. Four weeks of parenteral antibiotics is usually sufficient and recovery is generally complete.

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