

Pyomyositis or “Injectiositis” – *Staphylococcus aureus* Multiple Abscesses Following Intramuscular Injections

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Intramuscular injections have rarely been described as a cause of staphylococcal abscesses and/or septicemia [1]. Management usually includes surgical intervention and a prolonged antibiotic course. While tropical pyomyositis is a common disease in tropical areas where it is responsible for 4% of hospital admissions, a few cases were recently described in a temperate climate [2].

We present a patient who developed multiple abscesses due to *Staphylococcus aureus* following intramuscular injection, which was cured with conventional therapy.

Patient Description

A 50 old man was admitted to the internal medicine ward because of right hand cellulitis. A week before, he had received an intramuscular injection of diclofenac sodium (Voltaren, Ciba-Geigy) in the emergency room for low back pain. His past medical history was unremarkable apart from intermittent low back pain.

The physical examination revealed an ill-looking patient who was unable to sit because of severe back pain. He had tenderness and restriction of movements over the shoulder girdle especially on the left side. His temperature was 37.7°C. The rest of the physical examination was normal. Blood tests showed an elevated erythrocyte sedimentation rate 100 mm/hour and leukocytosis of 18,000/ml with 92% neutrophils. Liver function tests revealed total bilirubin 7.3 mg/dl most of which was direct, alkaline phosphatase 254 IU/L, alanine aminotransferase 46 IU/L and aspartate aminotransferase 74 IU/L. His serum albumin was 3.2 g/dl. *Staphylococcus aureus* (coagulase positive) sensitive to oxacillin, erythromycin and vancomycin was isolated from two blood cultures.

Antibiotic therapy with intravenous cloxacillin 12 g/day was instituted.

The clinical course entailed daily temperature elevations up to 39°C and severe back pain that was relieved only with a narcotic aid. Five and 7 days after admission he developed abscesses in the left shoulder and right foot that were drained surgically. *Staph. aureus* was cultured from both abscesses and the patient was diagnosed as having *Staph. aureus* sepsis. The laboratory work-up, which included immunoglobulin levels, human immunodeficiency virus serology, neutrophil function tests (chemotaxis and adhesion), abdominal ultrasound, transthoracic and transeophageal echocardiography, were interpreted as normal. Bone scan showed no evidence for osteomyelitis. Lumbar spine computed tomography demonstrated a left psoas abscess, measuring 8x6x4 cm with no evidence of osteomyelitis [Figure].

After 6 weeks of intravenous antibiotics the fever resolved, the back pain subsided and his mobility improved with no need for narcotic analgetics. A repeated lumbar spine CT demonstrated a similar psoas abscess with osteomyelitis that involved L5-S1 vertebrae. Recurrent blood cultures



CT scan of the lumbar spine. The left ileopsoas muscle is non-homogenous with hypodense areas (black arrows). Maximal dimensions are 8x6x4 cm. It is compatible with an ileopsoas muscle abscess.

were negative. Oral treatment with cloxacillin 8 g/day was continued for another 3 months. Additional lumbar spine CT performed 6 months after discharge showed normal psoas muscles. The abscess had disappeared.

Comment

Multiple abscesses due to intramuscular injections are described anecdotally in the literature. Rossi and Conen [1] reported six patients with multiple *Staphylococcus aureus* abscesses including a psoas abscess that were caused by intramuscular injections. Usually, there was a short lag period (hours to days) between the intramuscular injection and the clinical manifestations, with emergence of a gluteal abscess at the injection site. *Staphylococcus aureus* was frequently isolated from blood and was associated with a prolonged and complicated clinical course followed by complete recovery. In most cases the abscesses were drained either percutaneously or operatively, as in our patient.

Our patient had multiple abscesses involving various muscles, and therefore can be regarded as having pyomyositis. Psoas abscesses are rare and can mimic other diagnoses like septic hip, acute appendicitis or diverticulitis [3]. Pyomyositis is defined as an “acute bacterial infection of skeletal muscles usually due to *Staphylococcus aureus*” [4]. It is commonly described in tropical countries where it is responsible for 1–2% of hospital admissions. The clinical syndrome is unique and includes a single or multiple muscle abscess/es affecting typically the large striated muscles, with a subacute clinical course in which muscle pain precedes fever and swelling within a few days. Leukocytosis and eosinophilia are com-

mon, but blood cultures are positive in less than 5% of cases. Therapy includes drainage and a prolonged antibiotic regimen.

Recently, pyomyositis was described also in non-tropical areas. The precise incidence in temperate climate areas has yet to be determined. The clinical symptoms are indistinguishable from those recognized in the tropics. So far, about 40 cases have been reported in the United States [5]. Due to the rarity of the disease in non-tropical areas there is often a prolonged lag period until the correct diagnosis is made. There is no defined pathogenic explanation for the disease. Additionally, non-tropical pyomyositis has been associated with immunodeficient clinical syndromes like seropositivity to the human immunodeficiency virus, intravenous drug abuse, leukemia and others.

We propose that our patient presented with a non-tropical pyomyositis that was probably related to multiple intramuscular injections. Although the surgical procedure involved only a few of the muscles involved, our patient recovered completely after a long course of antibiotic treatment. Awareness of the clinical manifestations of tropical pyomyositis and a possible association with intramuscular injections would lead to earlier diagnosis and treatment of "infectiositis" or "pyomyositis" using a combined conservative and surgical approach, as in our patient.

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