The Brazilian Journal of
INFECTIOUS DISEASES
www.elsevier.com/locate/bjid

Case report

Primary pyomyositis and disseminated septic pulmonary emboli: a reactivated staphylococcal infection?

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ARTICLE INFO

Article history:
Received 7 January 2014
Accepted 18 March 2014
Available online 30 April 2014

Keywords:
Pyomyositis
Staphylococcus aureus
Septic pulmonary emboli
Reactivation

ABSTRACT

Staphylococcal pyomyositis is a severe invasive soft tissue infection with high mortality rate that is increasingly being recognized even in temperate climates. In most cases predisposing factors are identified that include either source of skin penetration or/and impaired host immunocompetence. A case of primary, community-acquired pyomyositis of the left iliopsoas muscle in a 59-year-old immunecompetent woman, which was complicated with septic pulmonary emboli within 24 h after hospital admission, is presented. The patient was subjected to abscess drainage under computed tomography guidance. Both pus aspiration and blood cultures revealed methicillin-susceptible *Staphylococcus aureus*. Given the absolute absence of predisposing factors and a remote history of staphylococcal osteomyelitis in the same anatomical region 53 years ago, reactivation of a staphylococcal soft tissue infection was postulated. Systematic review of the literature revealed a few interesting cases of reactivated staphylococcal infection after decades of latency, although the exact pathophysiological mechanisms still need to be elucidated.

Introduction

Primary pyomyositis is an acute bacterial infection characterized by suppuration within large skeletal muscles manifesting as single or multiple abscesses.[1–3] *Staphylococcus aureus* is the leading causative agent (70–90% of all cases). This invasive soft tissue infection was traditionally encountered in tropical countries, where concomitant parasitic infections, nutritional deficiencies and repetitive lower extremity trauma due to barefooted walking may have contributed to its pathogenesis.[1] In temperate climates, primary pyomyositis had been considered rare, with only 98 cases being reported in North America from 1971 to 1992.[1,2] Currently, many cases are being reported worldwide with increased incidence and high mortality of around 10%, which may reach 20–60% in short terms with

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http://dx.doi.org/10.1016/j.bjid.2014.03.002
1413-8670/

concomitant sepsis.[4,5] Predisposing factors are almost always identified, and include either skin penetration (for example intravenous drug use, intramuscular injections, external wounds or trauma, underlying skin disease) or impaired host immunocompetence like infection with human immunodeficiency virus, diabetes mellitus, malignancy, connective tissue diseases, cirrhosis, and immunosuppressive therapy.[2]

Apart from host predisposing factors, recent advances in microbiology have linked invasive soft tissue staphylococcal infections with the production of the Panton–Valentine leukocidin (PVL) toxin.[6,7] PVL is a member of the synergohymenotropic family of exotoxins that destroy leukocytes by creating pores in the cell membrane and induce tissue necrosis at the site of infection.[6] This toxin is believed to be a potent factor of virulence that contributes significantly to increased morbidity and mortality from both methicillin-sensitive (MSSA) and methicillin-resistant *S. aureus* (MRSA) infections.[7] Further studies have also concluded that production of PVL is associated with higher rates of recurrent invasive staphylococcal infections irrespective of methicillin susceptibility.[7]

In this study we report an interesting case of primary, community-acquired pyomyositis in a Greek immunecompetent woman, which was rapidly complicated with septic pulmonary emboli. Given the absolute absence of predisposing factors and a remote history of staphylococcal osteomyelitis in the same anatomical region 53 years ago, reactivation of a latent staphylococcal soft tissue infection was postulated. Systematic review of the literature revealed a few interesting cases of reactivated staphylococcal infections,[8–14] although the distinct pathophysiological mechanisms still need to be elucidated.

Case report

A 59-year-old woman was referred to our hospital because of high temperature, orthostatic hypotension and left thigh pain. The patient was in good condition until 15 days earlier, when back pain reflecting to the left hip and thigh developed. The pain worsened gradually and two days earlier fever developed accompanied with chills, sweats, and extreme fatigue. The patient was temporally relieved from symptoms after receiving antipyretic agents. The next day temperature rose to 39.5 °C, and the patient presented unbearable thigh pain. She was finally referred to hospital for further investigation.

The patient was a mother and was working as administrative employee in another hospital. She was not under medication for any illness. She mentioned a surgical procedure to the left ilium due to staphylococcal osteomyelitis 53 years ago, at the age of six. The patient reported no concomitant diseases or skin infection, no recent trauma, bites or intramuscular injections. The patient was a smoker and did not exercise strenuously.

On admission, the initial evaluation of the vital signs revealed hypotension with systolic pressure of 70 mmHg while lying down, pulse of 90 beats per minute, normal temperature, and respiratory rate of 15 breaths per minute with oxygen saturation of 96%. Chest X-ray and electrocardiogram were normal. Clinical examination revealed no thigh sensitivity, but the patient reported pain to the left hip and thigh that was exacerbated when performing movement. The remaining examination was normal. Initial laboratory investigation showed mildly elevated white blood cell count with neutrophilic predominance, elevated inflammatory markers (erythrocyte sedimentation rate, C-reactive protein, procalcitonin), and only mildly elevated liver enzymes and creatinine kinase.

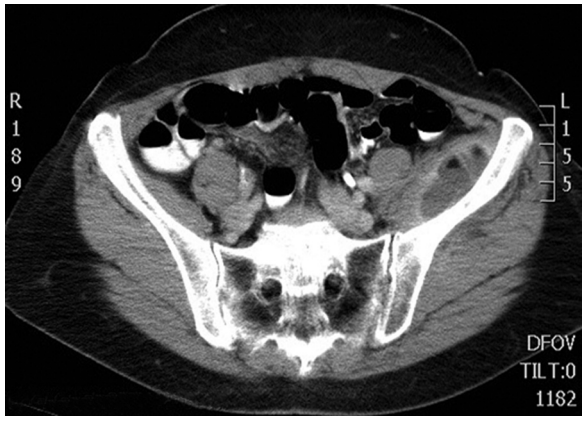

Fig. 1 – Computed tomography of the lower abdomen showing an abscess within the left ileopsoas muscle.

During the first hours of hospitalization, the patient was found febrile, and blood cultures were obtained. Antipyretics and empirical antibiotics against both Gram-positive and Gram-negative microorganisms were administered. Whole body imaging with computed tomography (CT) revealed an abscess within the left iliopsoas muscle (Fig. 1), and few smaller ones in the gluteus muscle, findings that were confirmed with magnetic resonance imaging (MRI) (Fig. 2). No adjacent bone changes were detected. Abscess was drained under CT guidance, and pus aspiration was sent to culture. Hours later the patient complained for new-onset sudden bilateral pleuritic pain with accompanied difficulty in breathing. On auscultation, abnormal breath sounds with crackles and diffuse rhonchi rapidly developed, while hypoxia was

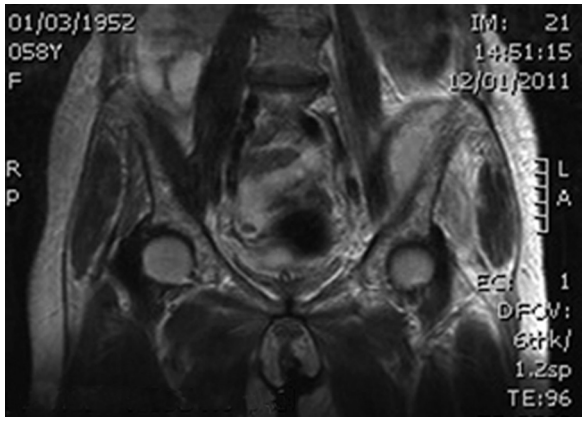

Fig. 2 – Magnetic resonance imaging of the abscess (T2-weighted, coronal section).