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Pyomyositis in an Apparently Healthy Man ： A Case Report

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Abstract

Pyomyositis characterized by bacterial infection of the skeletal muscle is a common infection in the tropics, but rare in the subtropical and temperate climates. It is considered to be the result of hematogenous seeding from an occult focus. *Staphylococcus aureus* is the most common causative agent. The diagnosis is often overlooked or delayed on account of under-recognition of this disease. This article presents an uncommon case of pyomyositis in an apparently healthy man with atypical presentations, involving the muscle of right gastrocnemius. The spiral computerized tomography scan taking the advantage of reconstructed function in defining the abscess especially is emphasized. It is hoped that the more recognition of this disease in clinic will lead to making early diagnosis and adequate treatment to all those suffered from pyomyositis in the subtropics. (J Intern Med Taiwan 2006; 17: 188-192)

Key Words ： Pyomyositis; Tropics; *Staphylococcus aureus*; Spiral computerized, Tomography scan; Subtropics

Introduction

Pyomyositis is a subacute and deep bacterial infection of skeletal muscle, predominantly seen in the tropical zone[1]. However, pyomyositis found in the non-tropical areas usually involving those immunocompromised host, has now emerged around the world[2]. It has been regarded as primary pyomyositis on account of unknown pathophysiology[3]. Hematogenous spreading from a transient bacteremia is considered to be the cause, possibly preceding or concurrent with a muscular injury of other causes[1-3]. *Staphylococcus aureus* is the most common causative agent with a tendency to involve a single muscle[3]. As usual, pyomyositis would not be the initial diagnosis. It might be overlooked or delayed if the affected muscle is deeply situated without a focal sign. Spiral computerized tomography scan precisely illustrates the

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abscess in this patient. Surgical debridement and drainage, accompanied by administration of appropriate antibiotics successfully treats this patient. This report illustrates an uncommon case of pyomyositis in an apparently healthy man with atypical presentations in the subtropics.

Case report

A 68-year-old man presented to the cardiovascular specialist at outpatient department with gradually worsening pain, accompanying with progressive swelling, warm sensation, and erythematous change over his right low leg for one week. Thrombophlebitis was impressed initially for this admission. He denied fever, chillness, shortness of breath, chest pain, and other constitutional symptoms. He had no history of heart disease or other medical conditions. He did not have the habit of smoking, drinking and drug abuse. He worked at a restaurant with a history of long-term standing over 12 hours per day. Recent trauma, heavy exercise, history of traveling, and exposure to animals were denied. On physical examination, he appeared well nourished but felt a lot of pain over his right low leg. His right knee was held in an extension position. He was afebrile and non-toxic with a heart rate of 82 beats per minute and a blood pressure of 127/63 mmHg. Systemic examination was normal. Local examination of his right low leg disclosed a swollen, warm, and tense calf with overlying erythema. No evidence of fluctuance but diffuse tenderness with a wooden consistency over the lesion was identified. Regional lymphadenopathy was absent. He could not walk on account of the difficulty in weight bearing and knee flexion.

Significant investigations included a white cell count of 12,500/ μL, with neutrophil 83.1%, lymphocyte 5.9%, monocyte 8.6%, and eosinophil 2.4%; hemoglobin ,14.0 g/dL; platelet count, 310,000/ μL; blood group B Rh positive; creatinine phosphokinase (CK), 48 U/L; aspartate aminotransferase (AST), 30 U/L; alanine aminotransferase (ALT) 46, U/L; blood sugar, 87 mg/dL; blood urinary nitrogen, 14 mg/dL; serum creatinine, 1.0 mg/dL; serum albumin, 2.7 mg/dL; C-reactive protein (Nephelometry), 2.46 mg/dL; anti-HIV antibody (ELISA), negative; serum iron, 57 μg/dL (reference range,49-181); ferritin, 138.0 ng/mL(reference range,17.9-464); and total iron binding capacity (TIBC), 341 μg/dL (reference range,250-450). A computerized tomography (CT) scan of the right low leg was obtained to identify the possible abnormality beneath the skin following inconclusive plain radiograph and Doppler flow study. The CT images over his right knee and low leg demonstrated an abscess with the size of 5.48 x 4.26

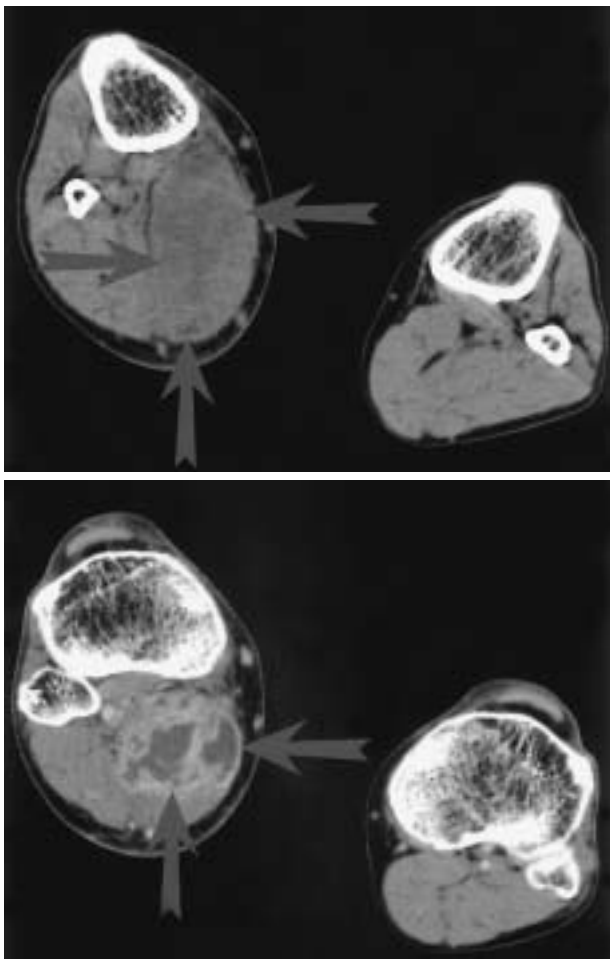

Fig.1.Non-contrast axial computerized tomography scan shows diffuse low attenuation and swollen change and contrast-enhanced axial computerized tomography scan shows several focal areas of low attenuation with rim enhancement in the medial aspect of gastrocnemius muscle, consistent with intramuscular abscess. (arrows)

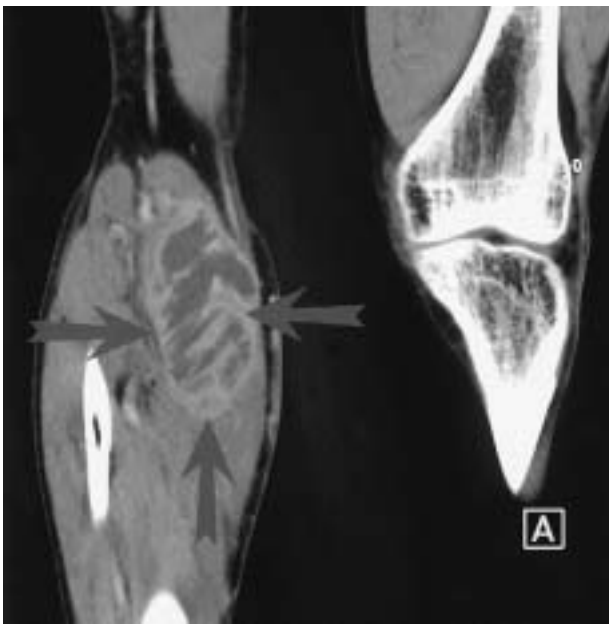

Fig.2. After reconstruction, contrast-enhanced coronal computerized tomography scan clearly illustrates the abscess formation with a size of 5.48 cm x 4.26 cm, separation by fibrotic bands in the medial aspect of right gastrocnemius muscle. (arrows)

cm at the medial aspect of right gastrocnemius muscle (Figure 1 & 2). Needle aspiration via subcutaneous on bedside disclosed a few purulent and sticky pus and it grew *S. aureus*, sensitive to oxacillin, clindamycin, first generation cephalosporin, levofloxacin, vancomycin, and teicoplanin. This patient had allergic reaction to clindamycin and oxacillin (generalized pruritic skin rash); therefore, parenteral antibiotic of first generation cephalosporin (cefazolin 1gm every 6 hours) was prescribed to him. Blood culture and anaerobic culture of pus were sterile. Although he remained afebrile, he remained the problems of worsening pain and decreasing range of movement on his right knee joint. The followed serum CK was within normal limits in the subsequent days. On day 6, he received the operation of fasciotomy and removal of the necrotic tissue with retaining a single drainage catheter. The pus cultured during operation also grew *S. aureus* which had the same antibiogram with the bacteria got from needle aspiration. On day 10, the antibiotic was switched to oral form of first generation cephalosporin (cephradine 500mg every 6 hours). Even though the muscular indurations and pain remained in the following days, the patient could ambulate without help. A follow-up soft tissue sonography demonstrated resolving abscess over his right calf. The patient was discharged on the 22nd hospitalization day on a regimen of cephalexin for an additional 6-week. He recovered well without significant sequelae after completing the therapy.

Discussion

Pyomyositis, also called tropical pyomyositis 、 myositis tropicans 、 tropical myositis 、 and primary pyomyositis, is an endemic disease throughout the tropics, but it is relatively rare in the subtropical and temperate climates[3]. Increased reports of pyomyositis in temperate climates are stressed recently, and they typically affect immunocompromised host, such as diabetes mellitus, human immunodeficiency virus (HIV) infection, and malignant tumor, etc[2,3]. Early diagnosis is crucial for treating patient successfully but it is often overlooked or missed because of the underrecognition with the disease, atypical presentations, and a wide range of differential diagnoses[3,4]. Although the precise etiology in primary pyomyositis remains unclear, the infection is believed to be a complication of transient bacteremia from an occult focus[3,5,6].The contributing factors are always absent in most of the patients with pyomyositis[3-5]. However, bacteremia alone is considered not to be sufficient to induce an intramuscular abscess with the fact that there are only a few patients exhibiting muscle abscess in bacteremic status[3,7]. In this regard, the musculature should be relatively resistant to bacterial infection. Concomitant abnormality in local muscle tissue structure, possibly after blunting trauma 、 vigorous exercise 、 nutritional deficiency 、 or infection, predisposing bacteria seeding might be present[2,3,8,9]. However, these findings are not documented clinically. This case was an apparently healthy 68-year-old man without traumatic history and his medical history did not reveal the factor that could contribute

to pyomyositis. He only had the focal discomforts in his leg without systemic manifestations. He worked at a restaurant. He had been doing work with maintaining a standing posture a lot of overtime lately for many years. It is likely that this overuse of the muscle may comprise the musculature, leading to be more susceptible to the occult bacteremic infection. Pyomyositis usually encroaches on a single large muscle, although involvement of multiple muscles could happen[4]. Muscle groups most frequently involved are quadriceps, glutei, pectoralis major, serratus anterior, biceps, iliopsoas, and gastrocnemius[5,8,10,11]. Meanwhile, a single group of muscle predominates in pyomyositis[5,8]. Up to 90% of the infective organism in pyomyositis is *S. aureus*[3,7]. Although low serum iron had been found in tropical pyomyositis; however, the role of iron in encouraging bacterial growth has no common consensus[12]. In addition, there is no evidence-based support for this and it is not found in this patient. Blood grouping also had been concerned with pyomyositis [13], but the relationship need to be elucidated in the future.

Pyomyositis has been classified into three distinct stages, which represent a gradual progression from non-specific symptoms to a septic state[3,8,14]. The characteristics in different stages of pyomyositis have been mentioned in the literature[3, 12]. In this case, he could be classified into the early stage II with focal inflammatory changes. Laboratory data are usually nonspecific in pyomyositis. Importantly, a normal muscle enzyme does not necessarily indicate the muscle is not involved in this disease. It is unclear however why the serum levels of muscle enzymes are generally normal in the presence of myositis[15]. This patient exhibiting a huge intramuscular abscess along with much necrotic tissue in it has a normal serum level of muscle enzyme during the whole course of present illness. Unfortunately, the muscle biopsy was not done during operation; otherwise, it may illustrate the pathogenic change of the involved muscle. Definite diagnosis is usually depending on image studies such as computerized tomography (CT) scan and magnetic resonance imaging (MRI) which may even facilitate early recognition of this disease entity. The application of the reconstructed function of spiral CT scan in this patient is appreciated with its ability to illustrate the abscess more distinctly (Figure 2). Thereby, the following surgical intervention will become more easily and less complicated as this guiding. These image studies are also useful in differentiating tumors, hematoma, and thrombophlebitis from abscess [16].

The choice of treatment for pyomyositis depends on its stage at presentation. During the early stage of the infection, it can be treated with antibiotics alone [7].However, most of the patients with pyomyositis are in the suppurative stage owing to the delayed diagnosis. Drainage from CT-guided or surgical, along with parenteral antibiotic remains the gold standard of therapy for pyomyositis. Parenteral antistaphylococcal antibiotic is the initial drug of choice[3]. After patient becomes stabilized, the antibiotic is then switched to oral form as maintaining therapy for a total of five to six weeks[3,14]. Complete recovery without sequelae is usually the rule in most of the patients with pyomyositis[3]. If the patient does not respond well to adequate treatment, the possibility of incomplete drainage of the abscess or multifocal abscesses should be taken into consideration. However, the possible complications of osteomyelitis of adjacent bones, muscle-scarring, residual weakness, functional impairment, and a defect at the infectious area due to muscle and connective tissue loss may occur[3,17]. It is hoped that the report of pyomyositis in this healthy man will improve the ability in recognition and thus early treatment of the disease in the subtropics.

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自發性膿肌症

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摘　要

典型的膿肌症是因細菌侵入骨骼肌所造成，大都發生於熱帶區域。台灣位屬於亞熱帶，此症並不常見。由於大多數的醫師並不熟悉此症，診斷多有延誤。膿肌症在大部份的病人身上難以找到確切的感染源，可能是由潛在性的感染源經血路散播所致。金黃色葡萄球菌爲最常見的致病菌。本例膿肌症發生於一位原本健康的68歲男性，最初是因右側小腿疼痛經診斷爲血栓性靜脈炎而由心臟科收治。後來經螺旋式電腦斷層確立診斷，並且利用其重組功能得以及定位腓腸肌膿瘍的大小和方位。病患經手術及適當的抗生素治療後而痊癒。希望借此病例，能讓位於亞熱帶的臨床醫師對膿肌症有更進一步的認識以利早期診斷及治療。