Obturator internus pyomyositis manifested as sciatica in a patient with subacute bacterial endocarditis
A rare case report
Wei-Ching Hsu, MDa, Jin-Yi Hsu, MDb, Michael Yu-Chih Chen, MDab,* Chung-Chao Liang, MDab

Abstract
Pyomyositis is a pyogenic infection of the skeletal muscles causing myalgia and fever in patients. Hematogenous seeding engendered by persistent bacteremia and septic embolism is usually the underlying cause of the disease. Trauma, intravenous drug use, and immunodeficiency are the main predisposing factors.

Obturator internus pyomyositis with sciatica has not previously been reported. We report a rare case of a patient with subacute bacterial endocarditis presenting with left buttock pain and sciatica.

Computed tomography confirmed the diagnosis of obturator internus pyomyositis. The patient was discharged uneventfully after successful antibiotic treatment.

The mortality rate of patients who have pyomyositis comorbid with another condition or disease is extremely high. Early diagnosis and aggressive management are imperative.

Abbreviations: CRP = C-reactive protein, CT = computed tomography, ESR = erythrocyte sedimentation rate.

Keywords: endocarditis, obturator internus, pyomyositis, sciatica

1. Introduction
Pyomyositis is an infectious disease of the skeletal muscles and is mostly caused by bacterial infection. It is an infrequent complication of bacterial endocarditis.[1,2] In a prospective case series comprising 11 patients diagnosed with staphylococcal pyomyositis between 1998 and 2007, only 1 patient had bacterial endocarditis. Recent trauma, immunodeficiency, and intravenous drug use are considered to be the main predisposing factors. [3] Most pyomyositis presents with muscle pain and fever. Although some studies have described piriformis pyomyositis manifested as sciatica,[3–6] obturator internus pyomyositis with sciatica has not previously been reported. We herein present a case of obturator internus pyomyositis manifested as sciatica in a patient with subacute bacterial endocarditis. The related literature is also reviewed.

2. Ethics statement
The Research Ethics Committee of Hualien Tzu Chi Hospital approved the case report.

3. Case report
A 49-year-old man with a history of chronic liver cirrhosis presented with intermittent fever and chills for 2 days. He had a history of high alcohol intake but had stopped drinking several months earlier. A grade II systolic ejection murmur was detected in the aortic region during auscultation. Transesophageal cardiac echography revealed a small oscillating vegetation at the aortic valve. He was treated empirically with intravenous vancomycin 1000mg every 12 hours for a diagnosis of subacute bacterial endocarditis. Three pairs of blood cultures were obtained and yielded Staphylococcus haemolyticus. Subsequent blood cultures were sterile after 12 days of antibiotic treatment. However, the patient complained of left lower back pain radiating through his buttock to the posterior aspect of the left thigh. A deep tenderness over the left gluteal region was found without swelling, warmth, or ecchymosis. A straight leg raise test was administered, but the result was equivocal. The symptoms rapidly deteriorated despite analgesics and the antibiotics. Contrast-enhanced computed tomography (CT) revealed an enlarged left obturator internus muscle with heterogeneous contrast enhancement (Fig. 1). Pyomyositis of the left obturator internus was confirmed and intravenous gentamicin 80 mg every 12 hours was administered. Because no well-liquefied abscess was present, drainage was not considered. The sciatica and myalgia subsided gradually with antibiotics treatment. After a complete course of antibiotics for subacute endocarditis, the patient improved and was discharged uneventfully.
4. Discussion

Pyomyositis mostly occurs in tropical areas; however, the incidence in temperate climates has increased in recent years.\[3,4,7–9\] Its predisposing factors include trauma, intravenous drug use, and immunodeficiency such as HIV infection, diabetes mellitus, malignancy, rheumatologic disorder, liver cirrhosis, and renal insufficiency.\[3\] Bacteremia is associated with pyomyositis, though the mechanism remains to be elucidated.\[1,10\] One hypothesized mechanism is initial muscular trauma followed by bacteremia and finally infection of the traumatized muscle.\[3,8\] A review reported that a third of pyomyositis cases were associated with local trauma or intensive exercise, approximately 30% had a positive blood culture, and approximately 60% involved HIV or another underlying condition.\[3\]

Because pyomyositis is a soft tissue infectious disease, muscle pain and fever are the initial symptoms and are followed by abscess formation and sepsis.\[3,5,11–13\] The infection usually affects the extremities and pelvic muscles.\[3,7,14\] Sciatica cause by pyomyositis of the piriformis or gluteal muscles has been reported in a few patients.\[4,6\] *Staphylococcus aureus* is the most common pathogen; other pathogens have been reported but are rare.\[8\] *S. haemolyticus* is one of the coagulase-negative staphylococci, a major nosocomial pathogen, but is rarely reported as a cause of community-acquired native valve infective endocarditis. *S. haemolyticus* is mostly isolated from axillary and pubic areas associated with foreign body-related infection and bloodstream infection in neonates.\[14\] Our patient underwent debridement 3 times and received a split-thickness skin graft operation for a compartment syndrome because of a trauma-related left thigh hematoma 2 months before admission. His bacterial endocarditis and pyomyositis may have been related to this trauma and the following procedure. Magnetic resonance imaging is the first choice for diagnosing pyomyositis because it yields a superior soft tissue contrast compared with CT.\[15\] The initial management of pyomyositis should be intravenous antibiotics, and drainage should be performed if an abscess forms.\[1,3,15\]

Because the initial presentation of pyomyositis is acute pain in the pelvis or extremities, early diagnosis is sometimes difficult.\[3\] When the patient has other preexisting medical conditions, the symptoms can be difficult to characterize. In a previous case report, a patient with acute lymphoblastic leukemia was hospitalized for induction chemotherapy and developed pyomyositis that rapidly progressed to quadriplegia and septic shock. The patient presented initially with right hand and left knee pain only.\[16\] Approximately 80% of patients with pyomyositis, whether immunocompromised or immunocompetent, experience fever.\[3\] White blood cell count is not a favorable marker for pyomyositis, especially for immunocompromised patients.\[3,16\] For immunocompetent patients, C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) may be good laboratory tests for excluding pyomyositis.\[16,17\] A retrospective review of 199 children with a mean age of 8 years found that no child with a CRP level of less than 3.6 mg/dL or ESR less than 22 mm/h had pyomyositis.\[17\] For immunocompromised patient, because pyomyositis can progress quickly, early image studies must be performed. Our patient initially reported left buttock pain with sciatica. The symptoms mimicked those of many other diseases and conditions such as simple muscle strain, piriformis syndrome, lumbar spondylosis, and intervertebral disc displacement. The history of liver cirrhosis, bacteremia, and rapidly deteriorated symptoms prompted us to quickly investigate to confirm the diagnosis and prescribe an aggressive antibiotics treatment. The antibiotic regimen was based on empiric therapy for native or prosthetic valve endocarditis according to American Heart Association guideline.\[18\] Gentamicin was added empirically because infective endocarditis from enterococcal infection is not uncommon in patients with chronic liver disease.

In summary, if a patient with bacteremia complains of local muscular pain with sciatica, the possibility of pyomyositis should be considered, particularly if the patient has predisposing factors. Early diagnosis and prompt medical intervention are crucial in treating such patients.\[3\]

References

\[1\] Block AA, Marshall C, Ratcliffe A, et al. Staphylococcal pyomyositis in a temperate region: epidemiology and modern management. Med J Aust 2008;189:323–5.
[2] Lo TS, Mooers MG, Wright LJ. Pyomyositis complicating acute bacterial endocarditis in an intravenous drug user. N Engl J Med 2000;342:1614–5.

[3] Grum NF. Bacterial pyomyositis in the United States. Am J Med 2004;117:420–8.

[4] Toda T, Kodama M, Rokkaku T, et al. Sciatica caused by pyomyositis of the piriformis muscle in a pediatric patient. Orthopedics 2013;36:e257–9.

[5] Kamal T, Hall M, Moharam A, et al. Gluteal pyomyositis in a non-tropical region as a rare cause of sciatic nerve compression: a case report. J Med Case Rep 2008;2:204.

[6] Colmegna I, Justiniano M, Espinoza LR, et al. Piriformis pyomyositis with sciatica: an unrecognized complication of “unsafe” abortions. J Clin Rheumatol 2007;13:87–8.

[7] White S, Stopka S, Nimityongskul P, et al. Transgluteal approach for drainage of obturator internus abscess in pediatric patients. J Pediatr Orthop 2015;Epub ahead of print. DOI: 10.1097/BPO.0000000000000681.

[8] Montazeri N, Athale UH, Fulford M, et al. Pyomyositis causing temporary quadriparesis during induction therapy for acute lymphoblastic leukemia: case report and review of the literature. J Pediatr Hematol Oncol 2015;37:223–6.

[9] Unnikrishnan PN, Perry DC, George H, et al. Tropical primary pyomyositis in children of the UK: an emerging medical challenge. Int Orthop 2010;34:109–13.

[10] Ruiz ME, Yohannes S, Wladyka CG. Pyomyositis caused by methicillin-resistant Staphylococcus aureus. N Engl J Med 2003;352:1488–9.

[11] Navinna MR, Yudhisdran J, Kandeepan T, et al. Tropical pyomyositis as a presenting feature of subclinical leukemia: a case report. J Med Case Rep 2013;7:9.

[12] Slade T, Hawkes R, Atherton G, et al. Obturator externus pyomyositis. Pediatr Emerg Care 2014;30:638–9.

[13] Savvidou S, Kalogiannis E, Tsakiri K, et al. Primary pyomyositis and disseminated septic pulmonary emboli: a reactivated staphylococcal infection? Braz J Infect Dis 2014;18:457–61.

[14] Becker K, Heilmann C, Peters G. Coagulase-negative staphylococci. Clin Microbiol Rev 2014;27:870–926.

[15] Stevens DL, Bistow AL, Chambers HF, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious Diseases Society of America. Clin Infect Dis 2014;59:e10–52.

[16] Chong X, Ahnik M, Arjandas M. Obturator internus pyomyositis in a child: a case report. Malays Orthop J 2014;8:69–70.

[17] Browne LP, Mason EO, Kaplan SL, et al. Optimal imaging strategy for community-acquired Staphylococcus aureus musculoskeletal infections in children. Pediatr Radiol 2008;38:841–7.

[18] Badour LM, Wilson WR, Bayer AS, et al. Infective endocarditis: diagnosis, antimicrobial therapy, and management of complications: a statement for healthcare professionals from the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease, Council on Cardiovascular Disease in the Young, and the Councils on Clinical Cardiology, Stroke, and Cardiovascular Surgery and Anesthesia, American Heart Association: endorsed by the Infectious Diseases Society of America. Circulation 2005;111:e394–434.