

***Staphylococcus aureus* Pericardial Abscess Presenting as Severe Sepsis and Septic Shock After Acupuncture Therapy**

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Pericardial abscess is an extremely rare complication of *Staphylococcus aureus* bacteremia. We report a case of a 72-year-old woman with multiple acupuncture scars on both knees who presented with shortness of breath and general weakness. Transthoracic echocardiography and pericardiocentesis confirmed the presence of pericardial fluid collection. *Staphylococcus aureus* grew in both pericardial fluid and blood. Although an aggressive medical treatment including intravenous antibiotics and percutaneous drainage, the patient died 2 days after admission. (**Korean Circ J 2012;42:501-503**)

KEY WORDS: *Staphylococcus aureus*; Pericarditis; Acupuncture.

Introduction

Pericardial abscess is a rare condition which results from hematogenous spread, direct extension from an adjacent infectious focus, trauma, or surgery. A pericardial abscess by *Staphylococcus aureus* is rarer¹⁻³⁾ and to our knowledge, this is the first case report of a pericardial abscess as a complication of staphylococcal bacteremia in Korea.

Case

A 72-year-old woman presented to the emergency room with dyspnea and myalgia that developed 2 weeks after undergoing

acupuncture therapy on both knees due to arthralgia. Vital signs on admission showed hypotension (80/40 mm Hg), tachycardia (118 beats per minute), tachypnea (20 per minute), and hypothermia (35°C). On physical examination, the patient had multiple needle scars on both knees with dappled rashes on her entire body (Fig. 1A). Her laboratory results showed elevated white blood cell counts (10100/mm³), with neutrophil 88%, elevated high sensitive C-reactive protein level of 36 mg/dL (reference range, 0-0.5 mg/dL), blood urea nitrogen/creatinine 71/4.5 mg/dL, myoglobin 5169 ng/mL (reference range, 16.3-96.5 ng/dL), creatine kinase myocardial band 9.7 U/L (reference range, 0-3.6 U/L), Troponin I 0.28 ng/mL (reference range, 0-0.1 ng/mL). A chest radiograph showed cardiomegaly and an electrocardiography showed atrial fibrillation with rapid ventricular response. A transthoracic echocardiogram demonstrated concentric left ventricular hypertrophy with fluid collection in the posterolateral wall of the pericardium with no evidence of valvular vegetation or tamponade physiology (Fig. 1B). Pericardial aspiration of the fluid revealed a bloody material (Fig. 1C) and cultures grew *Staphylococcus aureus*. Blood cultures showed staphylococcal bacteremia (Fig. 1D). Lab analysis of aspiration fluid showed elevated white blood cell counts (>50000/mm³), with polymorph-nuclear neutrophil 90%, pH 7.3, glucose 5 mg/dL, lactate dehydrogenase 12397 U/L, albumin 2.4 g/dL and total protein 6.2 g/dL. Percutaneous drainage and empiric antibiotic treatment were started immediately. However, the patient expired due to refractory sepsis and organ failure.

Received: October 31, 2011

Revision Received: December 4, 2011

Accepted: December 30, 2011

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• The authors have no financial conflicts of interest.

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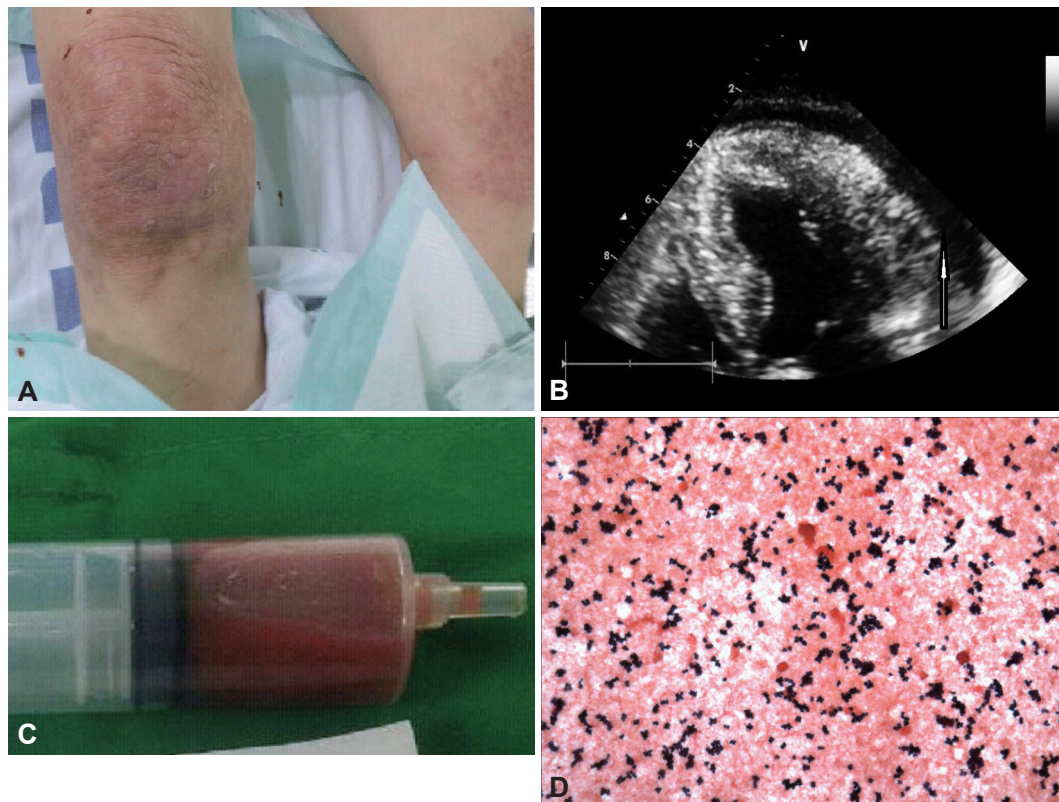


Fig. 1. Serial diagnostic procedures of pericarditis. A: Multiple needle scars on both knees due to acupuncture therapy. B: Transthoracic apical 4-chamber view showing localized pericardial effusion (arrow) posterolateral to the left ventricle. Arrow indicates the lucent region considered to be (and later confirmed as) abscess. C: aspiration fluid showing a bloody material. D: clusters of Gram-positive cocci (Gram stain, $\times 400$, blood).

Discussion

Pericardial abscess is a serious, life-threatening illness associated with high mortality. A pericardial abscess is an extremely unusual complication of *Staphylococcus aureus* bacteremia.¹⁻⁴⁾

The mechanism of purulent pericarditis by *Staphylococcus aureus* is unknown. Possible explanations include hematogenous seeding or direct extension into a pre-existing pericardial cyst or purulent pericarditis occurring in a patient with old pericardial adhesions.^{5,6)} Other microorganisms causing pericardial abscess include *Mycobacterium tuberculosis*, Gram-negative bacilli, *Streptococcus species*, and *Aspergillus*. In Korea, only two cases of tuberculous pericardial abscess and *Bacteroides fragilis* have been reported.^{7,8)}

Because delayed diagnosis of pericardial abscess may lead to debilitating complications, early echocardiography is important. Tomography provides useful information on the extent of the pericardial abnormality when the echocardiographic picture is not clear.⁵⁾ The primary treatments for pericardial abscess include percutaneous or surgical drainage and pericardiectomy with prompt administration of appropriate antibiotics.

Although we cannot verify the pathogenesis of this patient's infection, based on the multifocal acupuncture therapy history of

this patient and the absence of previous pericardial disease, the pericardial abscess may have been caused by hematogenous spread of *Staphylococcus aureus* from the soft tissue infection of the knees. However, it remains to be determined whether acupuncture treatment severely increases the risk of bacteremia, or whether this case is simply a coincidence implicating acupuncture.

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