



Community-acquired methicillin-resistant *Staphylococcus aureus* endocarditis with septic embolism of popliteal artery: a case report

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A 20-year-old man presented with a 14-day course of fever. Physical examination showed petechiae of the conjunctivae, Janeway lesions on both hands, a grade III/VI systolic murmur over the apex, pulseless dorsal pedal artery and posterior tibial artery of the right leg, and a pale right foot. Femoral arteriogram of the right leg revealed total occlusion of the popliteal artery with collateral circulation of the posterior tibial artery. Transthoracic echocardiogram showed trace mitral regurgitation. Embolectomy of the right popliteal artery was done, and penicillin and gentamicin treatment was administered. However, postoperative fever developed intermittently. Transesophageal echocardiogram disclosed vegetation over the anterior leaflet of the mitral valve. Methicillin-resistant *Staphylococcus aureus* (MRSA) was isolated from all three cultures of blood drawn at admission and from the septic embolus during operation. He had neither evidence of underlying heart disease, nor history of intravenous drug abuse or hospitalization. Exploratory cardiectomy with removal of vegetation on the mitral valve was performed followed by a 4-week treatment with intravenous vancomycin. After discharge, he was well at 2-year follow-up.

Key words: Community-acquisition, methicillin-resistant *Staphylococcus aureus* (MRSA), endocarditis

Methicillin-resistant *Staphylococcus aureus* (MRSA) is endemic in teaching hospitals with average prevalence rates ranging from 25% to 30% of all *S. aureus* [1]. From 1975 to 1981, MRSA emerged as an important nosocomial pathogen in tertiary care centers in the United States. The presence of MRSA was reported in 97% of hospitals in the United States in 1989. An increased frequency of outbreaks was also observed in community, community-teaching, municipal and university hospitals [2]. MRSA caused 18.5% of community-acquired *S. aureus* bacteremias from 1990 to 1993 in the United States [3]. In Taiwan, the proportion of MRSA among *S. aureus* isolates increased from 41% to 82% during the 10-year period from 1989 to 1997 at Taipei Veterans General Hospital, [4], 27% to 71% from 1990 to 1996 at National Taiwan University Hospital [5], and 26% to 81% from 1985 to 1994 at our hospital, Tri-Service General Hospital. Most MRSA infections occurred either in patients who had been hospitalized recently or in nursing home residents, and most community-acquired MRSA bacteremias occurred in patients who had previous contact with

health care personnel or a health care environment [3]. An increased incidence of community-acquired MRSA bacteremia with endocarditis has been reported in intravenous drug users (IVDU) in the United States [6]. Although cases of community-acquired MRSA bacteremia were described recently [7], community-acquired MRSA endocarditis among non-IVDUs has not been previously reported.

Case Report

A 20-year-old male soldier complained of intermittent high fever for 14 days prior to admission. Pain over the right knee region developed 9 days after the onset of fever. He had been initially treated with analgesic agents at a local clinic but his symptoms continued to worsen. He had been quite well before, and had no evidence of valvular heart disease, congenital heart disease, history of intravenous drug abuse, or previous exposure to health care personnel or a hospital environment. On admission, his temperature was 38.8 °C, blood pressure was 120/80 mmHg, pulse rate was 102/min, and respiratory rate was 24/min. Physical examination showed petechiae on the conjunctiva of both eyes and Janeway lesions on both hands. The breathing sound was clear. A grade III/VI systolic murmur over the apex was audible. The abdomen was soft and there was no

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Fig. 1. Femoral arteriogram of the right leg revealed total occlusion of the popliteal artery (black arrow) with collateral circulation to the posterior tibial artery (large black arrow).

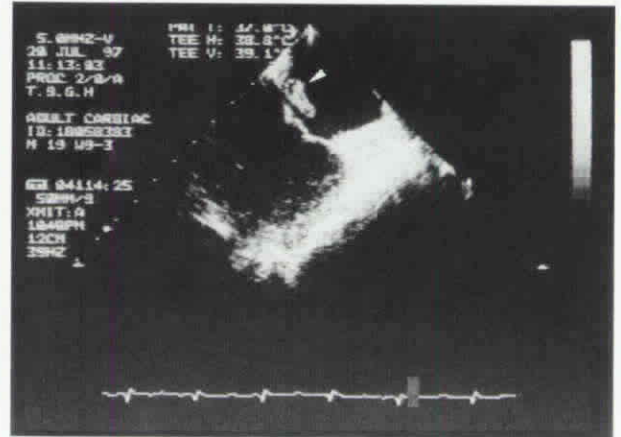


Fig. 2. Transesophageal echocardiogram disclosed vegetations on the anterior leaflet of mitral valve (arrow).

tenderness. The dorsal pedal artery and posterior tibial artery of the right leg were pulseless and the distal part of the right leg was pale. Laboratory results were as follows: hematocrit, 34%; white blood cell count, 16,500/mm³; platelet count, 150,000/mm³; aspartate aminotransferase, 67 U/L; and alanine aminotransferase, 95 U/L.

Transthoracic echocardiogram showed a trace mitral regurgitation. Arteriogram of the right femoral artery revealed total occlusion of the popliteal artery with collateral circulation to the posterior tibial artery (Fig. 1). Septic embolism with total obstruction of right popliteal artery was diagnosed and embolectomy was done. Empiric antibiotic treatment with penicillin-G and gentamicin was given initially. However, intermittent fever persisted after the embolectomy despite antibiotic treatment. On the fourth admission day, all three sets of blood cultures drawn on admission and the culture of septic embolus were found to be positive. MRSA was identified and confirmed by the culture of colonies with β -hemolysis, positive catalase, and latex test with Staphaurex Plus (Murex, UK). The minimal inhibitory concentration (MIC) to oxacillin was greater than 2 μ g/mL by the disc diffusion method using an oxacillin disk. Transesophageal echocardiogram disclosed vegetation over the anterior leaflet of the mitral valve (Fig. 2). An exploratory cardiomy with removal of vegetation on the mitral valve was performed. After 4 weeks of intravenous vancomycin (2 g/day divided into two doses) treatment, he was discharged and was well at a 2-year follow-up.

Discussion

In Taiwan, nosocomial *S. aureus* infections caused by

MRSA are seen with increasing frequency which have been reported to be as high as 80%, with the highest rates in teaching hospitals [4,5]. Nosocomial MRSA infection is associated with increased morbidity and prolonged periods of hospitalization [8,9]. The increasing prevalence of MRSA infection and colonization has probably occurred in parallel in the community and hospitals. In one study from Taiwan, MRSA accounted for 9% (5/55) of community-acquired *S. aureus* infection [8], but detailed data was not presented.

The increasing importance of community-acquired MRSA has been emphasized recently [7]. Community-acquired MRSA bacteremia, soft tissues infection, and pneumonia have been encountered with increasing frequency in recent years [10-12]. This is possibly the result of increased MRSA colonization in the community. A study in Japan found that the MRSA colonization rate increased from 4.5% in 1990 to 34.9% in 1994 among a suburban general population [12].

All of the previously reported 24 cases of community-acquired MRSA native valve endocarditis were in IVDUs [13]. Endocarditis due to *S. aureus* in non-IVDU primarily involves valves in the left side of the heart and is associated with mortality rates of 25% to 40%. The reported incidence of infective endocarditis in patients with community-acquired *S. aureus* bacteremia has ranged from 6% to 64% [14]. The complication of septic embolism in patients with infective endocarditis may increase morbidity and mortality. Thromboembolism has been reported more often in patients with valvular vegetation [15]. The central nervous system has been the most frequently

reported site of embolism, followed by the extremities [16]. Our patient suffered from vegetation on the anterior leaflet of the mitral valve with secondary septic embolism of the right popliteal artery.

Although community-acquired MRSA endocarditis has been documented in IVDUs and in patients with prosthetic valve [13,17], community-acquired MRSA native valve endocarditis among non-IVDUs has not been previously reported. The present case demonstrates that community-acquired native valve endocarditis due to MRSA may occur in a patient with no history of IVDU, no underlying heart disease and no prior contact with hospital or nursing home. Studies on the prevalence and the risk factors of community-acquired MRSA infection in Taiwan are warranted.

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