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Letter to the Editor

Purulent pericarditis complicating cardiac tamponade in a uremic patient caused by *Staphylococcus aureus*



Dear Editor,

Purulent pericarditis complicating cardiac tamponade is rare and associated with high morbidity and mortality.^{1–4} Purulent pericarditis can be caused by bacterial, viral, anaerobic, mycobacterial, fungal, parasitic and protozoal infections.^{1–4} The underlying comorbidities, entry site of the pathogens, and gross appearance of aspirated pericardial fluid (Fig. 1) can help us to estimate the causative agents of purulent pericarditis. Hence the prompt empiric antibiotic therapy may be more appropriate and earlier. We report a hemodialysis patient with massive purulent, pus-like pericardial effusion complicating cardiac tamponade. The pathogens were arising from hematogenous route via arteriovenous (AV) fistula. The empiric antibiotic coverage with Gram positive infections should be administrated in such uremic patients with purulent pericarditis.

A 47-year-old male patient has a medical history of type 2 diabetes mellitus and end-stage renal disease. He had received hemodialysis through an AV fistula of the forearm for four years. The patient was sent to our emergency department due to general weakness and drowsy level of consciousness for 24 h. His vital signs revealed that the body temperature was 36 °C, blood pressure 72/33 mmHg, pulse rate 99 beats per minute, and respiratory rate 20 breaths per minute. The results of physical examination showed that he had jugular vein engorgement, presence of distant heart sound, and a local erythematous skin with heat and tenderness around the AV fistula site. Chest X-ray showed the finding of extremely cardiomegaly with water bottle sign (Fig. 1A). A 12-lead electrocardiography showed sinus rhythm with frequent atrial premature contractions. Echocardiography disclosed presence of massive pericardial effusion with cardiac tamponade. He received emergent pericardiocentesis immediately and purulent pericardial fluid was aspirated (Fig. 1B). About 1000 ml pus-like pericardial effusion was drained via pigtail tube (Fig. 1C). The laboratory data revealed that white blood cell count of

peripheral blood was 13,610/μL with neutrophil predominant, and the C-reactive protein was 26 mg/dL. Pericardial fluid showed WBC counts of 117,500/μL, with neutrophil 98%, and triglyceride level was 38 mg/dl, negative amebiasis antibody test, and absence of parasite ova. Gram stain of pericardial effusion showed presence of gram-positive cocci and many polymorphonuclear (PMN) cells. He received intravenous (iv) antibiotics with meropenem 500 mg daily and vancomycin 1000 mg three times a week (post-dialysis) empirically. Both pericardial fluid and blood culture yielded methicillin-susceptible *Staphylococcus aureus* (MSSA). The antibiotics were de-escalated to oxacillin 2 g iv q6h plus gentamicin 40 mg iv qd. A pleural-pericardial window was created under video assistant thoracoscopy. The transesophageal echocardiography revealed absence of valvular vegetation, and the whole body inflammation scan showed no evidence of osteomyelitis. The patient was discharged and had recovery well after a complete course of eight weeks antibiotic therapy.

Viral and idiopathic pericarditis account for about 80–90% cases of acute pericarditis.³ Purulent pericardial effusion and complicated with cardiac tamponade has rarely been reported. *S. aureus* is the most common organism of purulent bacterial pericarditis and it usually originates from occult underlying infection.¹ Primary purulent pericarditis may occur in some high-risk population, such as patients with chronic kidney disease with hemodialysis, diabetes mellitus, alcoholism and those in immunocompromised states.⁴ As described in our patient, the *S. aureus* pericarditis was caused by hematogenous spread of the punctured wound of an AV shunt during hemodialysis.⁵ Antibiotics with *S. aureus* coverage (including MSSA and MRSA) should be administered empirically for the septic embolism or blood stream associated infection,⁶ especially in patients with end-stage renal disease and purulent, pus-like pericardial effusion for preventing detrimental or possible life-threatening events of this disease.

<https://doi.org/10.1016/j.jmii.2017.09.004>

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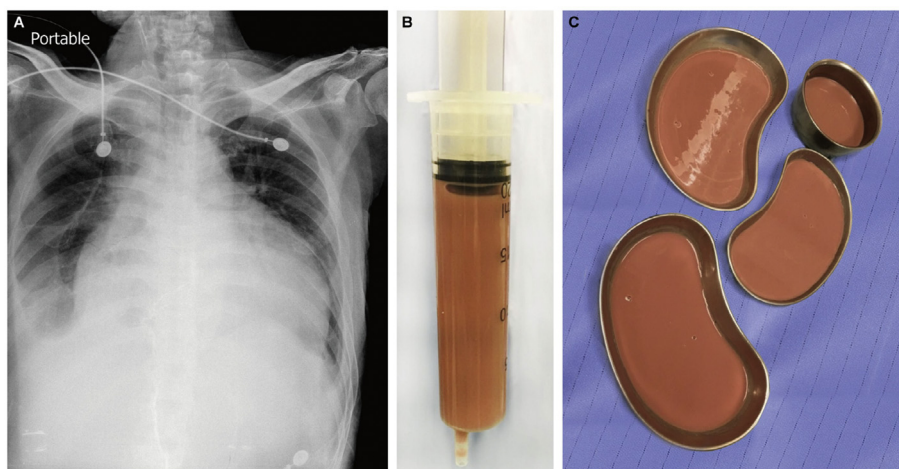


Figure 1. (A) The CXR showed extremely cardiomegaly with water bottle sign. (B) Purulent pericardial fluid was aspirated during an emergent pericardiocentesis. (C) Massive amount of pus-like pericardial effusion (about 1000 ml) was drained through a pigtail catheter.

Conflict of interest

The authors have no competing interests to declare.

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30 August 2017

Available online 26 October 2017