Cardiac arrest and ventricular tachycardia from coronary embolism: an unusual presentation of infective endocarditis

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Introduction

Ventricular tachycardia (VT) has been described as one of the possible complication of acute coronary syndrome. Although the majority of acute coronary syndrome (ACS) cases are caused by plaque rupture, coronary embolism from infective vegetation has been reported as a rare etiology of acute myocardial infarction. Identifying of this rare complication is crucial in management of the patient. We have reported a case of coronary embolism from infective endocarditis in which VT and cardiac arrest are the initial presentations.

Case Report

Seventy-six-years-old woman with chronic myelocytic leukemia (treated with imatinib) was found unresponsive during routine clinic visit. The first cardiac rhythm noted to be polymorphic VT. Two defibrillation shocks were delivered with return of spontaneous circulation. Apart from low grade fever, she denied having chest pain or other complaints. The initial electrocardiogram was not suggestive of acute ischemic changes (Fig. 1). Her cardiac biomarkers were elevated with troponin T level of 0.32 ng/mL (>0.1 ng/mL considered abnormal). Coronary angiogram revealed an abrupt interruption of very distal left anterior descending artery (LAD) without other obstructive disease (Fig. 2, Video 1. See corresponding video/movie images at www.anakarder.com). There are no collateral vessels or significant atherosclerotic plaque demonstrated in this area. The diagnosis of coronary embolism of the distal LAD was made and believed to be the cause of VT and cardiac arrest. Transesophageal echocardiogram revealed large mitral and aortic vegetations (the largest was 1.9 cm in diameter) with mild valvular regurgitation (Fig. 3, Video 2. See corresponding video/movie images at www.anakarder.com). *Methicillin Resistant Staphylococcus aureus* was identified from blood culture. During admission, she developed acute left hemiparesis. Subsequent magnetic resonance imaging showed multiple areas of acute embolic stroke. Referral to cardiothoracic surgery was made given the size of vegetations and multi-organ embolism. The patient decided against surgery and chose to be treated conservatively with antibiotic. She was transferred to rehabilitation facility and discharged home.

Discussion

Systemic embolism is one of the common complications of infective endocarditis which can occur in 22-50% of cases (1). Infective endocarditis caused by *Staphylococcus aureus*, Candida species, HACEK organisms and Abiotrophia species are at higher risk of embolization (1). Coronary artery embolism from infective endocarditis due to dislodged fragments from valvular vegetation is rarely reported and the precise incidence is difficult to ascertain. In an autopsy study, microemboli can be found in the coronary arteries up to 60% but hardly resulting in transmural myocardial infarction (2). In a study by Manzano et al. (3) incidence of ACS from coronary embolism in patient with infective endocarditis was 0.6%. The LAD is the most common location for coronary artery embolism from endocarditis (3-5). The vegetation of the mitral valve, particularly at the anterior mitral valve leaflet, has a higher chance of embolization to the coronary artery (4). Certain findings on coronary angiogram such as abrupt termination of single coronary artery without atherosclerotic disease or collateral circulation should raise suspicion for coronary embolism (6, 7).

Despite significant improvement in ACS treatment, management of coronary embolism in the setting of infective endocarditis remains controversial. The use of systemic anticoagulation does not prevent embolic phenomenon in patient with infective endocarditis (1). Experience with

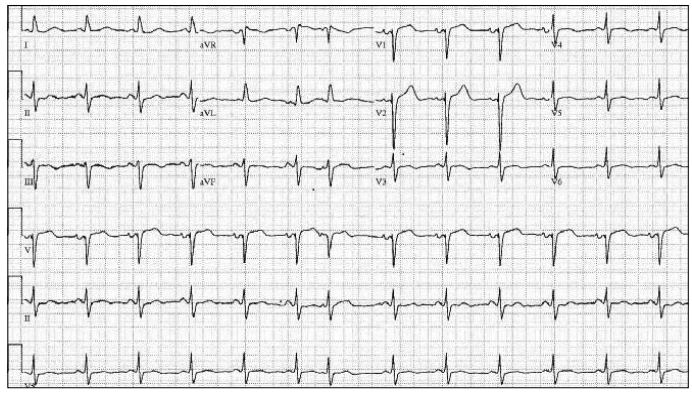

Figure 1. The 12-lead electrocardiogram on admission showed normal sinus rhythm with rare premature atrial complex and nonspecific T wave abnormalities

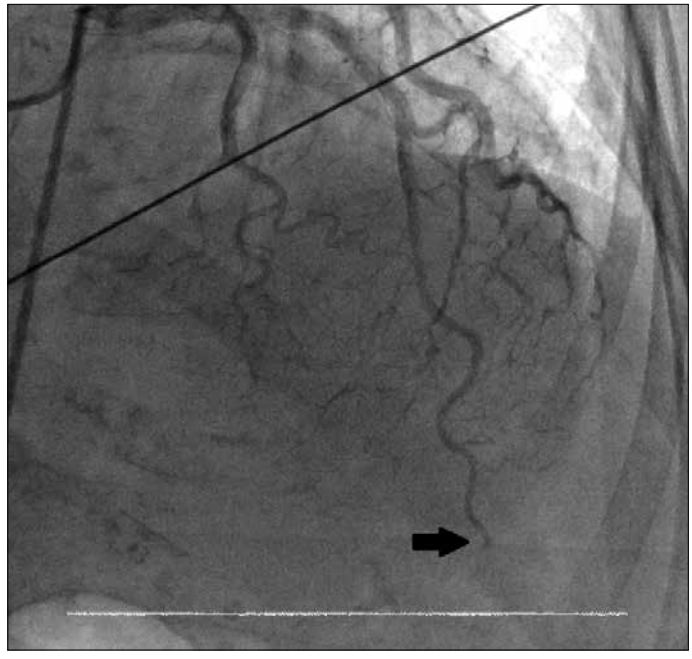

Figure 2. Selective coronary angiogram demonstrated minimal luminal irregularity of the left anterior descending and left circumflex artery and their branches. There is an abrupt termination of the contrast at the very distal segment of the left anterior descending artery (arrow) suggestive of embolic phenomenon

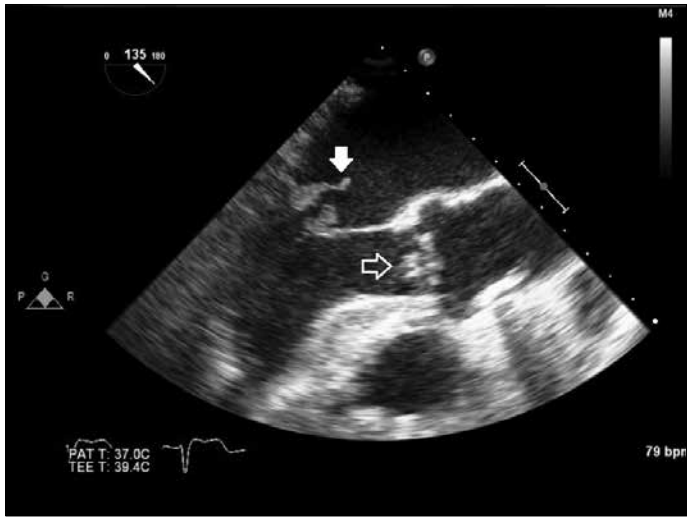

Figure 3. Transesophageal echocardiogram demonstrates large, hypermobile echodensities on the mitral (white arrow) and aortic valve leaflets (clear arrow) consistent with valvular vegetations

thrombolytic and percutaneous coronary intervention (PCI) in the setting of infective endocarditis related myocardial infarction is limited. The use of thrombolytic is largely unfavorable given an increased risk of intracranial hemorrhage from coexisting cerebral septic embolism or mycotic aneurysms (7-9). Despite lack of direct comparison, PCI in this setting appears to be a preferred approach and considered to be safer than thrombolytic therapy (3-5, 9). Catheter thrombectomy appears to be useful in this clinical setting (10). Percutaneous transluminal balloon angioplasty, though provide satisfactory result, it carries a risk of mycotic aneurysm at the balloon dilation site and reocclusion of the vessel (4-6). Placement of intracoronary stent may prevent elastic recoil and improve coronary artery patency, especially in the setting of firm embolus as is with infected vegetation; however, it also has a fatal risk of stent infection (4-6).

Conclusion

Coronary artery embolism from endocarditis is an uncommon but life-threatening complication of infective endocarditis. In the appropriate setting, the clinical presentation of acute coronary syndrome without significant atherosclerotic disease discovered should alert clinician to search for this unusual condition. High index of suspicion and prompt diagnosis are essential to favorable outcome.

Video 1. Selective coronary angiogram (right anterior oblique view) demonstrated minimal luminal irregularity of the left anterior descending and left circumflex artery and their branches. There is an abrupt termination of the contrast at the very distal segment of the left anterior descending artery suggestive of embolic phenomenon
Video 2. Transesophageal echocardiogram (mid-esophageal view at 135 degree) demonstrates large, hypermobile echodensities on the mitral and aortic valve leaflets consistent with valvular vegetations

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Available Online Date: 04.02.2014

DOI:10.5152/akd.2014.5183

A rare cause of congestive heart failure after seven years of open heart surgery: Organized intrapericardial hematoma

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Introduction

Delayed hemopericardium with constrictive pericarditis is an extremely rare complication of open heart surgery, chest trauma, or epicardial injury (1, 2). We present the case of a patient who underwent triple coronary artery bypass grafting that was complicated seven years later by the presence of calcific constrictive paricarditis. The patient was asymptomatic for seven years following bypass surgery before the symptoms of heart failure became apparent.