STEMI due to septic embolism from prosthetic aortic valve Aspergillus spp. Endocarditis in an immunocompetent patient.

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Abstract

A 65-year-old man with a history of aortic valve replacement surgery and non-coronary artery disease was admitted to the emergency department with acute ST-segment elevation myocardial infarction (STEMI). Coronary angiography revealed left anterior descending (LAD) artery occlusion, which was treated successfully with angioplasty. The patient developed obstructive valvular dysfunction, and large vegetation was observed on echocardiography. The patient subsequently developed irreversible septic shock and died several days later. The pathology report identified Aspergillus as the etiologic agent.

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Abstract

A 65-year-old man with a history of aortic valve replacement surgery and non-coronary artery disease was admitted to the emergency department with acute ST-segment elevation myocardial infarction (STEMI). Coronary angiography revealed left anterior descending (LAD) artery occlusion, which was treated successfully with angioplasty. The patient developed obstructive valvular dysfunction, and large vegetation was observed on echocardiography. The patient subsequently developed irreversible septic shock and died several days later. The pathology report identified Aspergillus as the etiologic agent.

Case

We report the case of a 65-year-old man with a history of severe aortic stenosis and aortic prosthetic valve replacement. Pre-surgical coronary angiography showed no significant obstructions, and other comorbidities were discarded. The patient recovered without complications and was discharged home with anticoagulant treatment. One month after surgery, he arrived at the emergency department complaining of sudden oppressive retrosternal chest pain and dyspnea. On physical examination, his heart rate was 74 beats per minute, he was found to be diaphoretic, hypotensive, and tachypneic with 96% oxygen saturation. Thoracic examination revealed no rales and prosthetic valve sounds without murmurs. His leukocyte, glucose, troponin, and B-type natriuretic peptide (BNP) levels were 8.5x109/L, 143g/dL, 120ng/ml and 659pg/mL, respectively. The initial electrocardiogram showed anterolateral ST-segment elevation myocardial infarction (STEMI). Emergency

coronariography was performed, revealing proximal left anterior descending (LAD) artery embolic occlusion, and coronary balloon angioplasty was successfully performed. (Figure 1)

During recovery, the patient presented with fever; blood cultures were taken, and empirical vancomycin was initiated. Transthoracic echocardiography (TTE) showed normal prosthetic function and no vegetation. Blood cultures were negative, and clinical evolution was satisfactory, so he was discharged home. The patient was readmitted to the emergency department three weeks later with fever, cardiogenic shock, and complete atrioventricular block, so a temporal pacemaker was placed. Upon physical examination, a new aortic systolic murmur was auscultated without prosthetic click sounds. Urgent TTE revealed 14 x 15 mm vegetation at the prosthetic aortic valve. Septic and cardiogenic shock were diagnosed and attributed to infective endocarditis. The patient experienced cardiac arrest and died a few hours later, despite aggressive management. The postmortem pathology report confirmed Aspergillus ssp , prosthetic aortic valve endocarditis, and anterolateral myocardial infarction. (Figure 2)

Learning objectives

- Identify clinical presentation and risk factors for the embolic coronary acute syndrome as the onset of *Asper*gillus Endocarditis (AE).

- Review of the diagnosis and treatment of AE and septic embolic STEMI.

Discussion

Fungal endocarditis (FE) is an extremely rare cause of septic embolism, especially in immunocompetent patients. AE is reported in 20-30% of all FE cases, affecting nearly 0.1% of all prosthetic cardiac valves. Congenital heart disease, prosthetic valves, malignancy, solid-organ transplant, bone marrow transplant, and immunosuppression are the main risk factors for FE.¹

The diagnosis of FE is challenging because the clinical symptoms are non-specific. In nearly 50% of cases, the diagnosis is postmortem. Blood cultures are often negative, even in disseminated infection. Some non-culture-based diagnostic methods, such as galactomannan enzyme immunoassay, are approved by the United States Food and Drug Administration (FDA). However, histological confirmation remains the gold standard for diagnosis.²

The clinical presentation of AE is vague, with fever and cardiac murmurs being the most common features, followed by embolization-related symptoms and cardiac failure. Clinically significant coronary embolism (CE) has been reported in 1.5% of cases with infective endocarditis, micro-emboli to the coronary arteries were present in more than 60% of cases on postmortem examination, particularly in mitral valve IE, vegetation larger than 10mm, and fungal endocarditis.³CE is considered definite in the following scenarios: angiographic evidence of CE and thrombosis without arteriosclerotic lesions, CE in several locations simultaneously, or the presence of concomitant systemic embolization not attributable to an apical thrombus.⁴

In this case, we performed a balloon angioplasty with aspiration thrombectomy which is the preferred treatment in STEMI secondary to septic embolism. Experience with thrombolytic therapy has been unfavorable and associated with a high risk of complications and low efficacy. Cardiac complications of septic coronary embolization during percutaneous transluminal coronary angioplasty are mycotic septic aneurysm, perforation, carditis, and resistant vegetations.⁴ We empirically initiated Vancomycin. Nevertheless, Voriconazole is the antifungal therapy of choice; some experts recommend the addition of an echinocandin or amphotericin B.⁵

Conclusion

STEMI due to septic CE is a rare complication of IE and has a high mortality. Diagnosing fungal endocarditis requires a high clinical index of suspicion, given the initial non-specific presentation. A large vegetation observed in the TTE is highly suggestive of fungal endocarditis. STEMI treatment in the presence of septic CE is still controversial and should be modified individually.

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