

A combination of severe complications in a case of infective endocarditis: Dehiscence of prosthetic aortic valve, aortic dissection, pseudoaneurysm and hematoma causing right ventricular collapse

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Abstract

Prosthetic valve endocarditis with mechanical complications causing pulmonary edema is fatal, therefore it needs to be diagnosed early and should be treated surgically in emergency setting. Transesophageal echocardiogram is crucial for recognizing the mechanical complications, which can be encountered on daily practice, but the coexistence of complications occurring on different mechanism is rather uncommon. Herein, we report a 21-year-old gentleman presenting with acute heart failure, whose imaging tests showed a combination of dehiscence of mechanical aortic valve prosthesis, aortic dissection, pseudoaneurysm and hematoma causing right ventricular collapse.

A combination of severe complications in a case of infective endocarditis: Dehiscence of prosthetic aortic valve, aortic dissection, pseudoaneurysm and hematoma causing right ventricular collapse

Very severe complications of infective endocarditis Mehmet Rasih Sonsoz¹, Ilyas Cetin¹, Duygu Inan¹, Alev Kılıçgedik¹, Yelda Saltan Ozates¹, Mehmed Yanartas², Nihan Kayalar²

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Keywords: acute aortic dissection, infective endocarditis, mechanical prosthesis, pseudoaneurysm

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

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Abstract

Prosthetic valve endocarditis with mechanical complications causing pulmonary edema is fatal, therefore it needs to be diagnosed early and should be treated surgically in emergency setting. Transesophageal echocardiogram is crucial for recognizing the mechanical complications, which can be encountered on daily practice,

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A 21-year-old gentleman presented to emergency department in our hospital with dyspnea, fatigue in April 2022. His medical history included implantation of mechanical aortic valve prosthesis in February 2022 due to infective endocarditis caused by methicillin-resistant staphylococcus aureus. He was discharged after 6 weeks of antibiotic regimen at the end of the March 2022. On admission, he was in New York Heart Association class IV. He had a temperature of 37.6° C, a pulse rate of 107 beats/minute, a respiratory rate of 24 breaths/min, and a blood pressure of 105/65 mmHg. Physical examination revealed 4/6 systolic murmur on all cardiac auscultation sites, left-sided S4, tachypnea, bibasilar crackles and jugular venous distention. His electrocardiogram showed sinus tachycardia. Chest x-ray demonstrated increased cardio-thoracic index and interstitial pulmonary edema with pleural effusions. Complete blood count demonstrated severe anemia with a hemoglobin level of 10.7 g/dl. The white blood cell count and platelet count were normal. High sensitivity C-reactive protein was 208 mg/L, procalcitonin was 1.43 ng/mL. Kidney function tests demonstrated elevated levels of creatinine 1.9 mg/dL. Additional test results included pro-BNP 11626pg/mL and high-sensitivity troponin T 856 pg/mL. Transthoracic and transesophageal echocardiogram disclosed normal left ventricular systolic function, dehiscence of aortic prosthesis, severe paravalvular regurgitation, pseudoaneurysm of sinus Valsalva, image of dissection flap and a round, heterogenous mass (75 x 55 mm) consistent with hematoma causing obstruction to the right ventricular inflow (Figure A – D; Video 1 - 3). Contrast enhanced thorax CT confirmed the aortic dissection, pseudoaneurysm of the sinus Valsalva and hematoma inside it (Figure E - I). Ceftazidime 2x2 g/day, vancomycin 1g/day and gentamicin 2 x 160 mg/day were initiated. Under general anesthesia, he underwent excision of the aortic prosthesis, repair of the pseudoaneurysm with a pericardial patch and construction of the neoannulus. A 21 mm Sorin conduit with mechanical prosthesis was implanted. He was extubated next day, and was admitted to the ward in order to receive the antibiotics for 6 weeks. His blood cultures remained sterile.

This case illustrates the importance of prompt imaging in a patient with prosthetic valve and acute heart failure for the diagnosis and treatment of mechanical complication of prosthetic valve endocarditis. Transesophageal echocardiography was necessary for the recognition of local complications, and contrast enhanced CT contributed to delineating the complex anatomy around the prosthetic valve. As 2015 ESC guidelines for the management of infective endocarditis states¹, surgery is indicated at emergency setting if the patient has infective endocarditis with severe regurgitation, obstruction or fistula causing refractory pulmonary edema or cardiogenic shock. With prompt diagnosis and surgery, the clinical status of the patient was stabilized.

Author contributions

MRS, IC and YSO were responsible for managing the patient along with cardiologists-in-charge and contributed to manuscript preparation. AK and DI performed echocardiography, contributed to concept and data interpretation of the article. NK and MY performed the surgery and helped in manuscript preparation.

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Figure Legends

Panel A. Apical 5-chamber view demonstrating both severe aortic regurgitation and turbulent tricuspid inflow caused by the obstruction of the hematoma. *Panel B - D.* Transesophageal echocardiogram in midesophageal view demonstrating dehiscence of prosthetic aortic valve, large pseudoaneurysm of noncoronary sinus of Valsalva (asterisk). Denote how the hematoma obstructs the tricuspid inflow (sharp sign). *Panel E.* Contrast-

enhanced cardiac computed tomography confirms the hematoma causing right atrial collapse. Panel F. The flap in ascending aorta indicates aortic dissection (black arrow). Panel G. Coronal axis of CT scan shows the pseudoaneurysm and hematoma originating from sinus Valsalva (sharp sign). Panel H. Coronal axis of CT scan shows the pseudoaneurysm and hematoma collapsing the right ventricle. Panel I. 3D volume rendering of the CT scan makes the pseudoaneurysm more visible (sharp sign). Ao: aorta; LA: left atrium; LV: left ventricle; RV: right ventricle

Supplementary Data

Video 1: Transesophageal four-chamber view demonstrating a large, cystic mass compatible with hematoma, collapsing right atrial free wall.

Video 2: Transesophageal short-axis view demonstrating dehiscence of the prosthetic aortic valve

Video 3: Transesophageal long-axis view demonstrating severe paravalvular aortic regurgitation

Ao: aorta; H: hematoma; LA: left atrium; LV: left ventricle; RV: right ventricle

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