CASE IMAGE

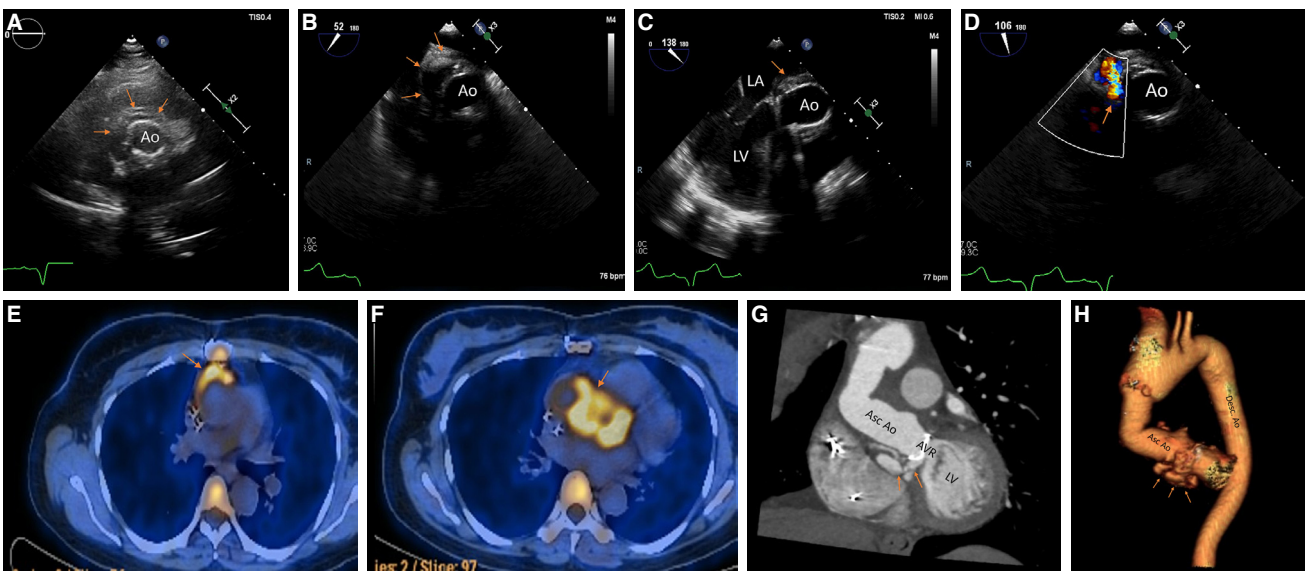
Incremental value of multimodal imaging in the evaluation of complicated prosthetic valve endocarditis

Protez kapak endokardit komplikasyonunun değerlendirilmesinde multimodal görüntülemenin artan değeri

Ahmet Güner[1]
Alkım Ateşli[1]
Hicaz Zencirkıran Aguş[1]
Ekrem Güler[2]
Gamze Babür Güler[1]

[1]Department of Cardiology Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital, İstanbul, Turkey
[2]Department of Cardiology, İstanbul Medipol University Faculty of Medicine, İstanbul, Turkey

A 47-year-old male patient was admitted to the hospital with complaints of fever (38.3°C), palpitations, chills, and weakness. He had undergone a surgical graft interposition repair of the ascending aorta and aortic valve replacement (AVR) (No. 19; St. Jude Medical Inc., St. Paul, MN, USA) of the bicuspid aortic valve with severe aortic stenosis and an ascending aortic aneurysm 2 years earlier. Laboratory tests indicated a high erythrocyte sedimentation rate and an elevated white blood count and C-reactive protein level. Although an echocardiographic examination of the patient had been normal 2 months prior, there was a high clinical suspicion of prosthetic valve endocarditis (PVE). An echocardiographic examination including transesophageal echocardiography indicated a pseudoaneurysm formation around the AVR and thickness around the ascending aorta conduit graft compatible with abscess formation (Fig. A–D; Video 1–3*). Computed tomography angiography (CTA) and 18F-fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET/CT) scans were performed. The 18F-FDG PET/CT scan revealed findings consistent with PVE and a peritube abscess (peritube FDG uptake: SUVmax 15.4) (Fig. E, F). Moreover, CTA showed a high-density abscess beginning at the level of the aortic valve and surrounding the aortic graft as well as 3 pseudoaneurysm sacs just below the level of the aortic valve, sized 10x19x16 mm, 24x14x24 mm, and 9x16x20 mm, which were associated with the left ventricular outflow tract (Fig. G, H, Video 4*). *Staphylococcus aureus* was detected in a triple-positive blood culture growth. The evaluation of the patient confirmed 2 major and 3 minor modified Duke criteria, clearly indicating endocarditis. Targeted antibiotic therapy (vancomycin, gentamicin, and rifampicin) was administered. Early surgery for a patient with complicated PVE (such as valve regurgitation, vegetation and dehiscence, or paravalvular abscess/fistula) is considered beneficial according to expert opinions and major cardiovascular guidelines. Hence, the patient underwent surgery on the sixth day of admission, but died during the operation (groove rupture).



Figures– (A-C) Transthoracic and transesophageal echocardiography (TEE) indicating a pseudoaneurysm formation around the aortic valve replacement and thickness around the ascending aorta conduit graft, which was compatible with abscess formation (yellow arrowheads); **(D)** TEE mid-esophageal short-axis view with color Doppler showing flow (yellow arrowhead) to the pseudoaneurysm; **(E, F)** 18F-fluorodeoxyglucose positron emission tomography/computed tomography scan findings consistent with prosthetic valve endocarditis and tube infection, and a peritube abscess seen in the intense, heterogeneous aortic root, and peritube FDG uptake (yellow arrowhead). Coronal plane computed tomography angiography (CTA) demonstrating **(G)** a contrast-enhanced high-density abscess starting at the aortic valve level surrounding the graft and reaching a diameter of 10 mm at its thickest point (yellow arrowheads); **(H)** Multiple pseudoaneurysm sacs associated with the prosthetic valve can be seen in this 3-dimensional CTA image (yellow arrowheads).

*Supplementary video files associated with this presentation can be found in the online version of the journal.