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The role of multimodality imaging in a case of aortic prosthetic valve endocarditis

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A 64-years-old male was admitted to Cardiology department for fever, borderline increased troponin-I and abnormal ECG showing anterior ischemia. Seven years before he underwent an aortic valve replacement for severe regurgitation with a bioprosthesis. Furthermore, he had a medical history of alcoholic liver cirrhosis and he had PEG feeding due to a squamous cell carcinoma of the tongue that was treated with partial glossectomy, neck dissection and adjuvant radiotherapy. One month before, he has been admitted to the hospital due to a Candida glabrata and methicillin-resistant S. epidermidis (MRSE) sepsis, which was treated with antibiotics and antifungals. With the suspicion of an active infection, we performed a transthoracic echocardiography (TTE), which detected an apical akinesis and a linear and highly mobile structure attached downstream the aortic prosthesis (1). At first, transesophageal echocardiography (TEE) was not allowed due to the risk of presence of esophageal varices and for the marked thrombocytopenia and an 18-fluorodeoxyglucose-postion emission tomography/computed tomography (18-FDG PET/CT) was performed which reported a pathologic uptake at the prosthesis level (2). After an esophagogastroduodenoscopy negative for varices, a TEE in conscious sedation was performed in order to detect more anatomical details but no sings of endocarditis were visualized at the prosthesis level (3). A contrast-enhanced computed tomography was performed then and this exam noticed a pseudoaneurysm in between the sinuses (4). A TTE was then repeated which was now positive for a perivalvular cavity communicating with the cardiovascular lumen with a pulsatile periprosthesis echo-free space with colour-Doppler flow detected (5). The patient was discussed in a multidisciplinary Heart Team meeting and, despite the increased surgical risk for the comorbidities, due to the presence of the prosthetic valve and the aggressive microorganism isolate (fungi and multiresistant bacteria), he was submitted to cardiac surgery for the presence of the local uncontrolled infection (6). Both the pathogens were detected at the analysis of the intraoperative specimen performed then.

Multimodality imaging can increase the diagnostic accuracy of Duke criteria for endocarditis and it may play a pivotal role in the early detection of infection in tricky cases (i.e. prosthesis endocarditis), as standard TTE may be initially inconclusive. Even TEE imaging can lead to false negative results in those cases, due to anatomical limitation (anterior shadowing of the aortic valve annulus due to the presence of the supporting stent). Moreover, new images technique should be used in an integrated approach to define the adequate management of the patient as they can guide the medical and surgical therapy.
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