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The additional role of 18F-FDG PET/CT in the diagnosis and management of prosthetic valve endocarditis

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Introduction: Infective Endocarditis (IE) is a life threatening disease and prosthetic valve endocarditis is always a clinical challenge. The modified Duke criteria has a low sensitivity and in some cases echocardiography results can be inconclusive or even negative. In this scenario, 18F-FDG PET/CT might have a key role in diagnosis.

Case report: A 90-year-old-male with history of hypertension, diabetes, asthma and atrial fibrillation presented with progressive fatigue, weight loss and dyspnea that had persisted for the last two months. Previous history of aortic valve replacement (biological prosthesis) and pacemaker implantation 8 years before had been known. Two days after hospital admission the patient complained of sudden dyspnea and angina. The electrocardiogram showed ongoing lateral wall infarction. Coronary angiography disclosed left marginal branch of the circumflex artery occlusion and a image suggestive of intracoronary thrombus. 24 hours later the patient presented with fever, pyuria and reduced mental awareness. Initial laboratory data presented high level of c-reactive protein and positive blood cultures for Streptococcus bovis. However transsesophageal echocardiogram has not showed any evidence of vegetation at the prosthetic valve or pacemaker. The study depicted increased FDG uptake at the aortic prosthetic valve (SUV max=3,3) and infero lateral wall of the left ventricle. No anomalous uptake of FDG was found at the pacemaker. Based on these results antibiotic therapy was maintained. Due to the high risk, the patient did not undergo surgery and remains asymptomatic and stable.

Conclusions: 18F-FDG PET/CT improves the diagnostic accuracy in patients with suspected infective endocarditis, particularly in cases of prosthetic valve endocarditis. In this case, 18F-FDG PET/CT provided the diagnostic key determining the origin of the endocarditis and guiding the treatment.