

## Image in cardiology

Hybrid  $^{18}\text{F}$ -FDG PET/MRI in Ischemic Cardiomyopathy

## Tecnología híbrida de PET/RM en la cardiopatía isquémica

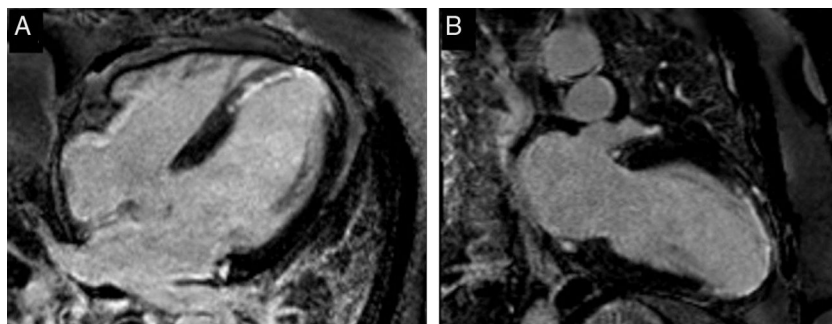
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Figure 1.



Figure 2.

A patient was referred to our center due to progression of acute myocardial infarction. Electrocardiography showed necrosis in leads V1 to V5 and septoapical akinesia. Magnetic resonance imaging (MRI) revealed left ventricular dilatation and systolic function of 40%, with anteroseptal akinesia, as well as subendocardial enhancement (50%-75%) of the distal anteroseptal third and apical transmural segment (enhanced 4- and 2-chamber views: Figure 1A-1B, respectively). Catheterization showed severe stenosis of the middle portion of the anterior descending artery and a stent was implanted at this site. At 1 month, hybrid positron emission tomography (PET)/MRI with  $^{18}\text{F}$ -fluorodeoxyglucose showed radiotracer uptake in the septum, indicative of viable myocardium, reduced ventricular volumes, and improved function (PET, MRI, and PET/MRI fusion images: Figure 2A-2C, respectively). Hybrid MRI and PET techniques allow simultaneous visualization of anatomical and metabolic images, respectively. Integration of the 2 techniques can compensate for the limitations of each, with MRI helping to localize defects/uptake observed with PET and PET helping to determine tissue viability in regions with inconclusive results on MRI. Thus, multimodal imaging, widely used in oncology and neurology, could be useful in the field of cardiology field for aspects such as ischemic heart disease and inflammatory, infectious, and tumoral processes. Before the clinical implementation of this hybrid technique, it will be necessary to optimize patient selection, increase the availability of equipment and new radiotracers, reduce radiation levels, and compare the cost-effectiveness of PET/MRI in ischemic heart disease with that of separate MRI or PET scans.

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