Post-infarct myocardial scar imaging in patients with ICD

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Scar imaging and substrate mapping are recognized as important steps in the post-infarct revascularization strategy. It is also helpful in planning ventricular tachycardia ablation or to better define the patient prognosis. However, delayed contrast enhanced (DE) cardiac magnetic resonance (cMR), the gold standard technique for scar imaging, is not applicable in ICD patients. The present case illustrates alternative techniques to delineate myocardial scar in these particular patients. A 61-year-old patient with prior myocardial infarction and coronary artery by-pass grafting was equipped with an implantable cardioverter defibrillator (ICD). Before, he received the ICD, a DE-cMR had confirmed the presence of a large transmural scar in the posterior wall of the left ventricle, with no residual viability (panel A). Two months after ICD implantation, a DE-multidetector computed tomography (MDCT) (panel B) and a DE-three-dimensional echocardiography (3DE) (panel C) were used to reassess the extent of the myocardial scar. The results were compared with the high-density electroanatomic mapping (EAM) performed during a VT ablation procedure (panel D). Comparing DE-cMR (A), DE-MDCT (B), DE-3DE (C), and EAM (D), the location, the size, and the transmural extend of the myocardial scar (arrows) correlated well. In our experience, DE-MDCT and DE-3DE are reproducible and accurate alternatives to DE-cMR to image myocardial scars in post-infarct patients with ICD.

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