Cardiac Magnetic Resonance Imaging in the Assessment of Myocardial Fibrosis among Patients with Dilated Cardiomyopathy

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Myocardial fibrosis is an important predictor of adverse clinical outcomes in patients with dilated cardiomyopathy (DCM). Cardiac magnetic resonance imaging (CMR) with late gadolinium enhancement (LGE) provides a non-invasive and highly accurate approach for identifying fibrotic myocardial tissue and assessing disease severity. The ability of CMR to characterize myocardial tissue has transformed the diagnosis and management of cardiomyopathies by offering detailed structural and functional information.

A prospective observational study involving 185 patients with confirmed DCM was conducted over a 24-month period. Participants underwent comprehensive CMR evaluation, including ventricular function assessment, late gadolinium enhancement imaging, and quantitative fibrosis analysis. The extent of myocardial fibrosis was correlated with left ventricular ejection fraction, ventricular remodeling, arrhythmia occurrence, hospitalization rates, and overall clinical outcomes. Follow-up examinations were performed to evaluate disease progression and therapeutic response.

Patients demonstrating extensive late gadolinium enhancement experienced significantly higher rates of ventricular arrhythmias, reduced left ventricular systolic function, and an increased incidence of heart failure-related hospitalizations. Quantitative fibrosis assessment provided additional prognostic value beyond conventional echocardiographic parameters, allowing more accurate identification of high-risk patients. Furthermore, CMR findings contributed to improved clinical decision-making regarding implantable cardioverter-defibrillator placement and optimization of medical therapy.

These findings support the growing role of CMR as an indispensable imaging modality for risk stratification, personalized treatment planning, and long-term monitoring of patients with dilated cardiomyopathy. Incorporating advanced CMR techniques into routine clinical practice may improve patient outcomes through earlier diagnosis and more targeted therapeutic interventions.

Biography

Prof. Daniel Moreno is a Professor of Cardiovascular Medicine at the University of Barcelona, Spain, with over 20 years of experience in clinical cardiology and cardiovascular imaging. His primary research interests include cardiac magnetic resonance imaging, cardiomyopathies, myocardial tissue characterization, and advanced non-invasive diagnostic techniques for cardiovascular disease. He has participated in several international multicenter cardiovascular imaging studies and has authored more than 90 peer-reviewed scientific publications in leading cardiology journals. Prof. Moreno is an active member of several international cardiovascular societies and regularly serves as an invited speaker and session chair at global cardiology and medical imaging conferences. His work focuses on translating advanced imaging technologies into routine clinical practice to improve early diagnosis, risk assessment, and personalized management of patients with cardiovascular diseases.