Prognostic value of non-ischemic ring-like left ventricular scar pattern in patients with apparently idiopathic ventricular arrhythmias: a CMR imaging study

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Background: The presence of left ventricular (LV) late gadolinium enhancement (LGE) at cardiac magnetic resonance (CMR) has been correlated to life-threatening arrhythmic events in patients with apparently idiopathic ventricular arrhythmias (VAs). Aim of the present study was to investigate the prognostic significance of a specific LV-LGE phenotype characterized by a subepicardial/midmyocardial "ring-like" pattern of fibrosis. Methods: Out of a total of 518 consecutive patients with apparently idiopathic VAs who underwent CMR study, 79 (15%) had evidence of LV-LGE. Of these, 23 (4%) patients had LV LGE with ring-like pattern, defined as subepicardial or midmyocardial LGE involving at least 3 contiguous segments in the same slice (group A), while 56 (11%) patients had LV LGE with no ring-like pattern (group B). The remaining 439 patients had no LGE (group C). The end-point of the study was a composite SCD, resuscitated cardiac arrest and nonfatal episodes of ventricular fibrillation or documented sustained ventricular tachycardia. Results: Group A patients were more frequently males compared to groups B and C (96% vs. 79% vs. 52%; p<0.01) and had more frequently a family history of SCD and/or cardiomyopathy (30% vs. 11% vs. 5%; p<0.01). All patients in Group A showed VAs with a predominant RBBB morphology vs. 38 (68%) patients in Group B and 65 (15%) in Group C (p<0.01). During a follow-up of 63±39 months, the composite outcome occurred in 13 patients (57%) in Group A vs. 11 (20%) in Group B and 2 (1%) in Group C (p<0.01). Conclusion: In patients with apparently idiopathic VAs, a nonischemic LV-LGE with a ring-like pattern at CMR is associated with a high rate of malignant arrhythmic events during follow-up.