Incidentally induced atrial fibrillation during programmed electrical stimulation in patients with depressed left ventricular systolic function after an acute myocardial infarction: a CARISMA substudy

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Background: The aim of this study was to investigate the clinically significant value of incidentally induced atrial fibrillation (AF) during programmed electrical stimulation (PES) in patients with left ventricular systolic dysfunction (≤40%) after an acute myocardial infarction (MI).

Methods: In this study we included 231 patients from the Cardiac Arrhythmias and Risk Stratification after Myocardial InfArction (CARISMA) study. These patients were identified 3-21 days after being diagnosed with an MI, had left ventricular ejection fraction ≤40% and had no prior history of AF. They all received an implantable cardiac monitor (ICM) and were continuously monitored for cardiac arrhythmias for 2 years. A PES was performed 6 weeks post-MI with pacing from the right atrium and coronary sinus for induction of SVT and from the ventricular apex and outflow tract with up to three extra stimuli for induction of VT. Induction of AF was unwanted but reported if this incidentally occurred.

Results: AF was induced in 34 patients (15%) during the PES of which 10 (29%) later developed AF. A total of 61 patients (26%) developed AF within 2-years follow-up and the overall risk of AF was not significantly increased in patients with PES induced AF compared to patients without inducible AF (HR 1.6, P = 0.14), however, the risk of AF ≤188 days post-MI was slightly increased (HR 3.0, P = 0.01). The risk of bradyarrhythmia (HR=0.2, P=0.07), ventricular arrhythmias (HR=0.7, P=0.77) and MACE (HR 0.5, P=0.28) was reduced in patients with inducible AF compared to patients without inducible AF.

Conclusions: Incidentally induced AF during an electrophysiological study in post-MI patients was relatively frequent (15%) but was not associated with a higher risk of atrial fibrillation, other cardiac brady- or tachy-arrhythmias or major cardiac events. Even though the short-term risk for AF slightly increased, this does not seem to justify anticoagulation treatment or intensified follow-up in these patients.