

## ACUTE CORONARY SYNDROMES

## Implantable cardiac monitor enables long-term recording of arrhythmias following acute myocardial infarction



A subcutaneously implantable device can be used to record the incidence and type of arrhythmias in the long term among patients with decreased ventricular function after acute myocardial infarction (AMI), report the CARISMA investigators. The researchers have also used these records to investigate the prognostic significance of the documented arrhythmic events.

Patients with decreased left ventricular ejection fraction after AMI are at increased risk of death during the 2 years following infarction. The contribution of arrhythmias to this increased risk and the incidence

of these events after the acute phase of myocardial infarction are not well known, as patients are not usually continually monitored. The Reveal® Plus 9526 (Medtronic Inc., Minneapolis, MN, USA) implantable cardiac monitor (ICM) enables automatic electrocardiographic recording for up to 2 years after implantation.

In the CARISMA study, 297 patients who had a left ventricular ejection fraction  $\leq 40\%$  after AMI received an ICM within 21 days of the event and were followed for  $1.9 \pm 0.5$  years on average. The ICM registered the occurrence of 885 arrhythmias in 137 patients (46.1% of the study population); 86% of these events were asymptomatic. Analysis of the 36 patients (12%) who died during follow-up showed sinus bradycardia and high-degree atrioventricular block to be independent predictors of all-cause mortality and cardiac-related death. Of note, second-degree to third-degree

atrioventricular block was a stronger predictor of death than any other clinical variable analyzed.

The ICM has some limitations, such as inability to detect certain forms of arrhythmia, store multiple types of tachyarrhythmias independently, or distinguish certain arrhythmias from each other. Furthermore, its memory is restricted to 13 events. These limitations can all lead to underestimation of the incidence of arrhythmias. Nevertheless, the results of the CARISMA study have shown that this device might be a promising tool to improve follow-up of patients after AMI.

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**Original article** Bloch Thomsen, P.E. et al. Long-term recording of cardiac arrhythmias with an implantable cardiac monitor in patients with reduced ejection fraction after acute myocardial infarction: the Cardiac Arrhythmias and Risk Stratification After Acute Myocardial Infarction (CARISMA) study. *Circulation* 122, 1258–1264 (2010)