Microvolt T-wave alternans in risk stratification of patients with ischemic and nonischemic dilated cardiomyopathy: can it help to better select candidates for ICD implantation? First experience of a single Belgian centre. # — Antoine de Meester, Olivier Descamps, Julie Melchior, Nicolas De Schryver, Damien Badot, Olivier Marcovitch (*Jolimont Hospital, Haine Saint Paul, Belgium*).

Background. Prophylactic implantable cardioverter defibrillator (ICD) therapy has been shown to improve sudden cardiac death (SCD) and overall mortality in selected patients (MADIT II and SCD-HeFT trials), on the basis of reduced left ventricular ejection fraction (LVEF) alone, but the absolute risk reduction is relatively small; only a few of ICD implanted for primary prevention ever deliver appropriate therapy. Microvolt T-wave alternans (MTWA) test has shown the most promise for identifying low-risk patients for SCD, and thus, better selection of ICD candidates, as recommended in some recent publications.

Methods. From January 2008 to June 2009, we prospectively performed MTWA (Heartwave II, Cambridge Heart Inc., Bedford, MA) in 73 unselected patients who meet MADIT II or SCD-HeFT criteria (60.4 ± 9.4 years, 85% male, 75% ischemic cardiomyopathy); the primary end point was documented arrhythmic events (sustained VT or VF or SCD).

Results. During an average follow-up of 39.2 ± 23.8 months, the primary end-point and SCD was found in 13 (18%) and 7 (10%) patients respectively. We compared patients with an abnormal microvolt T-wave alternans test (positive or intermediate) (group1, TWA+) to those with a normal (negative) test (group2, TWA-). Clinical characteristics were similar in the two groups, except for the left ventricular ejection fraction (LVEF) (29.4 ± 5.3% in group1 vs. 31.3 ± 5.1% in group2, p = 0.001). On univariate analysis, TWA+ was a significant predictor of arrhythmic events (38% vs. 5%, p = 0.0003) or SCD (24% vs. 5%, p = 0.013). This marker had a high sensitivity (84.6% and 77.7%) and negative predictive value (95.5% and 95.5%) for arrhythmic events and SCD respectively. Kaplan-Meier survival curves for subgroups divided according to TWA are shown in the figure. TWA+ clearly identified a subgroup of patients with higher arrhythmic events rate, during this long-term follow-up.

Conclusions. TWA is an accurate non-invasive test to select ICD patients for primary prevention of arrhythmic events and sudden cardiac death. Even in our small cohort, a normal TWA test clearly identifies patients at low risk who have a very good prognosis and are unlikely to benefit from primary prevention ICD implantation in a long-term follow-up.