

P1581

The global myocardial work index is a powerful predictor of major arrhythmic events in patients with organic heart disease and reduced left ventricular ejection fraction

Previtero M.¹; Sammarco G.¹; Genovese D.¹; Azzolina D.²; Tenaglia RM.¹; Ruozzi N.¹; Palermo C.¹; Iliceto S.¹; Muraru D.³; Badano LP.³

¹University of Padova, Dpt of Cardiac, Thoracic and Vascular Sciences, Padova, Italy

²University of Padova, Dpt of Statistic, Padova, Italy

³Italian Institute for Auxology IRCCS, San Luca Hospital, University Milano-Bicocca, Milan, Italy

Background: Current guidelines recommend implantable cardioverter defibrillator (ICD) for primary prevention of sudden cardiac death in patients with left ventricular ejection fraction (2DE LVEF) by two-dimensional echocardiography $\leq 35\%$. However, new echocardiography parameters of LV function such as the mechanical dispersion (MD), the LVEF by three-dimensional echocardiography (3DE) and the global myocardial work index (GWI) have been reported to provide a more accurate stratification of the arrhythmic risk, and potentially improve ICD patient selection.

Purpose: We wanted to compare the arrhythmic risk predictive power of the new parameters of LV function with the conventional 2DLVEF.

Material and Methods: we prospectively enrolled 216 patients (63 ± 12 years, 88% men) with organic heart diseases and 2DE LVEF $< 50\%$, in whom we re-measured LVEF using 3DE, and obtained MD and GWI using 2DE speckle tracking. Major arrhythmic events were defined as sudden cardiac death, sustained ventricular tachycardia, ventricular fibrillation and appropriate ICD shocks. We assessed the predictive power of 4 different parameters: 2DE LVEF $< 35\%$; 3DE LVEF $< 35\%$; MD > 80 ms; and GWI < 672 mmHg% to identify patients at risk of major arrhythmic events.

Results: During a mean follow-up of 27 ± 24 months, 24 patients (10%) experienced sudden cardiac death, whereas 28 patients (13%) presented major arrhythmic events. The predictive power in terms of major arrhythmic events prediction (Harrel C statistics) improved from 0.67 (95%CI 0.57-0.76) for 2DE LVEF $< 35\%$, to 0.73 (95%CI 0.64-0.82) for 3DE LVEF $< 35\%$, and 0.77 (95%CI 0.68-0.86) for GWI < 672 mm Hg%. Whereas, MD > 80 ms showed a limited predictive power (HCS= 0.53, 95%CI 0.41-0.76)).

Conclusions: GWI < 672 mm Hg% was the most accurate predictor of major arrhythmic events among echocardiography parameters in patients with organic heart disease and LVEF $< 50\%$.