

Electromechanical delay by speckle-tracking echocardiography: a novel tool for distinguishing between Brugada syndrome and isolated right bundle branch block

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Background: The electrocardiographic (ECG) definition of Brugada syndrome (BS) can be challenging because benign ECG abnormalities, such as right bundle branch block (RBBB), may mimic pathological ECG characteristics of BrS. However, although myocardial delay and deformation can be quantified by advanced imaging, it has not yet been used to differentiate between BrS and RBBB.

Purpose: The aim of this study was to characterize the electro-mechanical behavior of the heart of patients with type-1 BrS and subjects with isolated complete RBBB in order to differentiate these conditions.

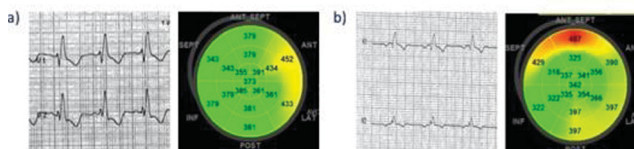
Methods: In this two-center study, 66 subjects were analyzed by standard and speckle-tracking echocardiography (STE): 22 type-1 BrS, 24 isolated complete RBBB, and 20 healthy subjects. The participants were not treated by any drug potentially influencing myocardial conduction.

Results: Standard echocardiographic parameters did not differ among the groups. STE demonstrated that right ventricular (RV) mechanical dispersion (MD) was greater in RBBB as compared to BrS and controls ($p < 0.05$). In patients with isolated RBBB, the greatest delay of RV time-to-peak longitudinal strain (TTP) was found in RV free-wall basal segments. Mean absolute deviations of TTP calculated for each left ventricular (LV) region were greater in patients with RBBB as compared to those with BrS and to controls with a localisation of the delay in LV antero-septal, anterior, lateral, and infero-septal basal segments (figure 1).

Conclusions: Advanced echocardiographic techniques may help to differentiate between BrS and RBBB. Indeed, STE allows to identify an electro-mechanical conduction delay in RBBB patients that is not found in patients affected by type-1 BrS.

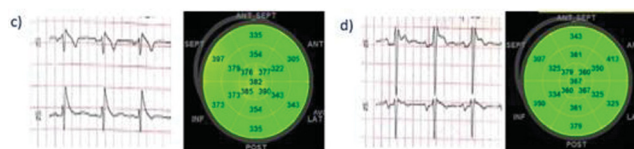
Complete isolated RBBB in absence of structural heart disease

POSITIVE ECG + ELECTROMECHANICAL DELAY FOUND IN THE LV BY BULL-EYE ANALYSIS OF LV TTP



Type-1 Brugada Syndrome

POSITIVE ECG + NEGATIVE SPECKLE-TRACKING ANALYSIS OF LV TTP



Electromechanical delay by STE