

Prolonged right ventricular outflow tract endocardial activation duration and presence of deceleration zones in patients with idiopathic premature ventricular contractions. Association with low voltage areas

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Abstract

Background and aims: Activation wavefront is rapid and uniform in normal myocardium. Fibrosis is associated with deceleration zones (DZ) and late activated zones. Our aim was to study the right ventricular outflow tract (RVOT) endocardial activation duration (EAD) in sinus rhythm, and assess the presence of DZs, in patients with PVCs and controls. Methods: We studied 29 patients with idiopathic PVCs from the outflow tract, subjected to catheter ablation and an activation and voltage map of the RVOT in sinus rhythm. A control group of 15 patients without PVCs that underwent ablation of supraventricular arrhythmias was also studied. The RVOT EAD and number of 10 ms isochrones were assessed. DZ were defined as a zone with >3 isochrones within 1 cm radius. Low voltage areas (LVA) defined as areas with local electrogram amplitude <1.5mV. Results: The two groups did not differ in relation to age, gender or number of points in the map. EAD and number of 10 ms isochrones were higher in the PVC group; 56 (41-66) ms vs 39 (35-41) ms, $p=0.001$ and 5 (4-8) vs 4 (4-5), $p=0.001$. Presence of DZs and LVAs were more frequent in the PVC group; 20 (69%) vs 0 (0%), $p<0.0001$ and 21 (72%) vs 0 (0%), $p<0.0001$. Patients with LVAs had longer EAD 60 (52-67) vs 36 (32-40) ms, $p<0.0001$. Conclusions: EAD was longer and DZs were more frequent in patients with PVCs and were associated with presence of LVAs.

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