

Prospective evaluation of a hybrid clinical and electrocardiographic algorithm to predict the origin of outflow tract PVCs. A prospective multicenter study

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Background: To predict the premature ventricular complex (PVC) site of origin (SOO) before the ablation procedure has important implications. 12 lead ECG information as well clinical characteristics are related with the PVC-SOO, but there is no prospective data validation.

Purpose: This prospective multicenter study sought to analyze the applicability and accuracy of a simple hybrid algorithm that includes electrocardiographic and clinical information in a consecutive patient population with outflow tract (OT) PVCs undergoing catheter ablation.

Methods: Consecutive patients with frequent OT-PVCs and indication for catheter ablation were prospectively included in 4 centers. The vascular access (femoral vein vs femoral artery) and the first outflow tract to be mapped were decided based on a two-steps hybrid algorithm (see Figure 1) including ECG information [R/S PVC precordial transition (PT): early PT if it occurs before V3; late PT if beyond V3] and clinical information [the following variables compute 1 point in a clinical score: age (>59 y.o); presence of hypertension; and gender (man)].

Results: 115 consecutive patients [42 (37%) man, 52 + 15 y.o] were included. Mean PVC burden at baseline was 20 ± 13% and mean LVEF was 59 ± 8%. Mean procedure time was 55 ± 26 min. Complete acute abolition of the PVC was achieved in 110 (96%) patients. 84 (73%) patients had the PVC's SOO in the right ventricle OT (RVOT) whereas 31 (27%) in the left ventricular OT (LVOT). Compared with patients with a RVOT-SOO, those with a LVOT-SOO were more frequently man [18 (58%) vs 24 (29%), p = 0.004], more frequently suffered from hypertension [18 (58%) vs 15 (18%), p < 0.001] and had an early R/S PVC transition [17 (55%) early PT, 3 (10%) late PT] in the case of LVOT-SOO vs 4 (5%) early PT, 55 (65%) late PT in the case of RVOT-SOO, p < 0.001]. The hybrid algorithm accurately anticipated the PVC's SOO in 101 (88%) patients. A reduction of at least 80% of PVC burden was achieved by 90% of patients at 6 months.

Conclusions: The hybrid algorithm, prospectively evaluated in an international multicenter study, has proved to permit to accurately anticipate the PVC's SOO (right vs left) in a consultive population of patients with OT PVCs.

Abstract Figure 1

