

Treatment of frequent premature ventricular contractions via a single very high-power short-duration application

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Very high-power short-duration (vHP-SD) radio-frequency (RF) catheter ablation (CA) with a power of >50 W for a short duration has been recently introduced and was found to be safe, effective, and fast for pulmonary vein isolation procedures.^{1,2} Very high-power short-duration ablation aims to create shallower but wider lesions in a very short time to potentially improve efficacy and safety. Although vHP-SD concepts have been evaluated for atrial procedures for CA within the ventricles only one case report has been reported in humans up to date utilizing the QDOT MICRO ablation catheter (QMODE +, 90 W/4 s) in combination with the CARTO system.³ Here we are reporting on a case of successful treatment of frequent premature ventricular contractions (PVCs) with high-density mapping of the right ventricular outflow tract (RVOT) utilizing EnSite™ X (Abbott) and the TactiCath™ Ablation catheter in a vHP-SD mode (70 W/7 s).

A 25-year-old male patient with frequent PVCs [32% PVC burden in 24 h Holter electrocardiogram (ECG)] presented with dyspnoea and palpitations. No further diseases were reported. No previous invasive treatment of PVC has been performed. The 12-lead ECG showed a bigeminy of monomorphic PVC with an inferior axis with notching in II, III, an RS transition in V2/V3, highly suggestive for a RVOT origin. After informed consent, the patient was scheduled for an ablation procedure.

At the beginning of the procedure, the patient presented the clinical PVC. The procedure was performed under deep sedation using fentanyl and propofol. Three right femoral vein punctures (3 × 8F) and one femoral artery puncture (1 × 6F) were performed guided by ultrasound. Three-dimensional electroanatomic reconstruction (EnSite™ X, Abbott) of the right ventricle (RV) was performed via multielectrode mapping catheter (Advisor™ HD Grid Mapping Catheter, Sensor Enabled™). The earliest activation was found within the antero-septal RVOT (30 ms to onset QRS). For CA, an irrigated contact force ablation catheter (TactiCath™, Abbott) was utilized. At the point of earliest activation, a single vHP-SD application of 70 W for 7 s (contact force 21–34 g, irrigation rate 17 mL/min) was applied resulting in an immediate loss of PVC (*Panel*). After a waiting period of 30 min and awakening of the patient, no PVC occurred. The total procedure time (skin to skin), including the waiting time of 30 min, was 85 min. The fluoroscopy time was 2,3 min. No periprocedural complications occurred. Antiarrhythmic drug therapy was stopped. On short-term follow-up (30 days), no recurrence of PVC occurred.

Here, we presented the first-in-man vHP-SD ablation within the RV to treat frequent PVC originating from RVOT by ablation with a single vHP-SD application using the TactiCath™ ablation catheter. Since the vHP-SD ablation method creates relatively shallow but wide lesions, this strategy seems to offer an ideal option for PVC ablation especially within the thin-walled RVOT to safely create transmural lesions with termination of the PVCs focus. For intramural foci, a switch to standard ablation technique might be necessary.

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Data availability

The data is not available to other researchers due to ethical reasons.

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