

Paced P wave morphology templates to guide atrial tachycardia localization

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Abstract

Introduction: Surface ECG is a useful tool to guide mapping of focal atrial tachycardia (AT). We thought to construct an algorithm, based on paced P wave templates from different anatomical sites in both atria in patients with normal hearts. **Methods:** We prospectively enrolled consecutive patients who underwent electrophysiology study, having no heart disease. Atrial pacing was carried out at different anatomical sites in both atria. Paced P wave morphology (PWM) and duration (PWD) were assessed. P wave morphology was classified into: positive, negative, biphasic (+/- or -/+) and isoelectric. A proposed algorithm was generated from the constructed templates of each pacing site. **Results:** Sixty-four patients (25 males) were enrolled. Mean age was 37 ± 13 years. Atrial pacing was performed in 61 patients (95%) at the right atrium and in 15 patients (23%) at the left atrium. A neg/iso P wave in V1, a pos/iso P wave in AVL and lead I identified right atrial pacing sites ($p=0.01$, $p=0.02$ and $p=0.02$, respectively). Negative P wave in lead aVL identified left pulmonary veins when compared to right pulmonary veins ($P=0.03$). PWD was significantly longer when pacing from lateral tricuspid annulus (TA) as compared to medial TA (136 ± 12 ms vs. 99 ± 10 ms, $P<0.001$) and when pacing from the left superior pulmonary vein as compared to the right superior pulmonary vein (152 ± 12 ms vs. 135 ± 10 ms, $P=0.001$). **Conclusions:** PWM and PWD derived from templates generated through atrial pacemapping could be used to guide localization of focal AT.

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