Characterization of right atrial substrate in patients with supraventricular tachyarrhythmias

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摘要
Abstract

Right Atrial Substrate of Supraventricular Tachyarrhythmias. Background: Voltage mapping has been used to detect diseased myocardium. However, accurate determination of the local atrial voltage at the same site, and simultaneous recordings from multiple mapping sites were limited. The purpose of this study was to investigate the right atrial (RA) substrate properties in patients with supraventricular tachyarrhythmias (SVT). Methods and Results: Forty patients (aged 55 ´ 20 years) undergoing noncontact mapping and ablation of SVT constituted the study population. There were eight patients with atrioventricular node reentrant tachycardia (AVNRT), eight patients with focal atrial tachycardia (AT), 14 patients with atrial flutter (AFL), and 10 patients with atrial fibrillation (AF). The mean peak negative voltage (PNV) was analyzed in virtual unipolar electrograms, which were obtained from 256 equally distributed RA endocardial sites during sinus rhythm (SR), atrial pacing, and tachycardia. The mean PNV of global RA during SR (-1.34 ´ 0.22 vs. -0.90 ´ 0.40 vs. -1.00 ´ 0.36 vs. -0.85 ´ 0.35 mV, P = 0.04), atrial pacing at cycle lengths of 500 ms (-1.30 ´ 0.29 vs. -0.70 ´ 0.35 vs. -0.76 ´ 0.25 vs. -0.64 ´ 0.26 mV, P = 0.02), and 300 ms (-1.54 ´ 0.47 vs. -0.94 ´ 0.21 vs. -0.75 ´ 0.27 vs. -0.57 ´ 0.22 mV, P < 0.01) were significantly greater in patients with AVNRT compared to AT, AFL, and AF. Furthermore, the mean PNV decreased during atrial pacing with shorter pacing cycle length was demonstrated only in patients with AFL and AF. Conclusion: Negative unipolar voltage analysis of global RA showed different RA substrate characteristics during various SVT. The substrate property of activation and cycle length-dependent voltage reduction may be related to the development of AFL and AF.

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