

Electrical remodeling of the canine superior vena cava after chronic rapid atrial pacing

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摘要

Abstract

BACKGROUND: The superior vena cava (SVC) might serve as the trigger and/or substrate for paroxysmal atrial fibrillation (AF). However, the electrophysiological properties of the SVC with chronic AF are unknown. The purposes of this study were to investigate the electrophysiological properties of the SVC and the electropharmacological effects of intravenous dl-sotalol on the canine SVC after chronic rapid atrial pacing (RAP). **METHODS AND RESULTS:** In the control group, the effective refractory period (ERP), conduction velocity, and AF inducibility of the SVC were assessed in 6 normal dogs before and after an infusion of dl-sotalol. In the experimental group, the ERP, conduction velocity, and AF inducibility of the SVC were assessed before and after dl-sotalol administration in 10 dogs after 8 weeks of RAP. The SVC showed a shorter ERP, decreased slope of rate-adaptation of the ERP, increased ERP dispersion, a decreased conduction velocity, and increased inducibility and duration of AF initiated from the SVC in the RAP dogs. In the RAP dogs, intravenous dl-sotalol significantly increased the ERP, but dl-sotalol did not change the slope of rate-adaptation of the ERP, dispersion of the ERP, conduction velocity, inducibility, or duration of AF initiated from the SVC. **CONCLUSIONS:** The present study demonstrates that the canine SVC shows significant electrical remodeling and increased AF vulnerability after chronic RAP. Intravenous dl-sotalol was unable to decrease the inducibility or duration of AF initiated from the SVC.