

Reversal of atrial electrical remodeling following cardioversion of long-standing atrial fibrillation in man.

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摘要

Abstract

BACKGROUND: In animal studies, atrial fibrillation has been shown to shorten the atrial refractory period and impair its rate adaptation. However, little is known about the effects of chronic atrial fibrillation on atrial electrophysiology and its recovery course in humans. **METHODS AND RESULTS:** Nineteen patients, mean age 64 +/- 14 years, with chronic atrial fibrillation of more than six months duration were included in this study. All of them were successfully converted to sinus rhythm with an external defibrillator. Atrial effective refractory periods at right atrial appendage and distal coronary sinus were determined with five pacing cycle lengths (300, 400, 500, 600 and 700 ms) at 30 min after cardioversion and once a day for four days. The atrial conduction properties, including P wave duration of surface ECG, and right and left atrial conduction times, were also measured at the same time interval. Twenty age-matched patients without a history of atrial tachyarrhythmia were evaluated as controls. In comparison with controls, chronic atrial fibrillation significantly shortened the atrial effective refractory period, impaired its rate adaptation response, especially at distal coronary sinus, and depressed the conduction properties of atria. The atrial conduction properties did not change during the four-day follow-up period; however, the atrial effective refractory period was gradually prolonged and its rate adaptation response improved after restoration of sinus rhythm. **CONCLUSIONS:** In humans, chronic atrial fibrillation significantly shortened the atrial effective refractory period, and impaired its rate adaptation response. Restoration and maintenance of sinus rhythm could reverse these electrophysiological changes.