Prevention of the initiation of atrial fibrillation: mechanism and efficacy of different atril pacing modes

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摘要

Abstract

Several atrial pacing modes have been reported to be effective in the prevention of atrial fibrillation (AF); they included biatrial pacing, dual site right atrial pacing, Bachmann's bundle (BB) pacing, and coronary sinus pacing. However, the relative efficacy and electrophysiological mechanisms of these pacing modes in the prevention of AF are not clear. In 15 patients (age 54 +/- 14 years) with paroxysmal AF, P wave duration, effective refractory period, and atrial conduction time were determined with six different atrial drive pacings, that were right atrial appendage (RAA), BB, right posterior interatrial septum (RPS), distal coronary sinus (DCS), RAA plus RPS simultaneously (DSA), and RAA plus DCS simultaneously (BiA). All these patients consistently had AF induced with early RAA extrastimulation coupling to RAA drive pacing. No patient had AF induced with RAA extrastimulation coupled to BB, RPS, or DCS drive pacing, but seven and eight patients had AF induced with RAA extrastimulation coupled to DSA and BiA drive pacing, respectively. The P wave duration was longest during RAA pacing, and became shorter during other atrial pacing modes. Analysis of electrophysiological change showed that early RAA extrastimulation coupled to RAA drive pacing caused the longest atrial conduction delay among these atrial pacing modes; BB, RPS, and DCS drive pacing caused a greater reduction of this conduction delay than DSA and BiA drive pacing. In addition, the effective refractory periods of RAA determined with BB, RPS, and DCS drive pacing were similar and longer than that determined with DSA and BiA drive pacing. In patients with paroxysmal AF, this arrhythmia was readily induced with RAA extrastimuli coupled to RAA drive pacing. BB, RPS, and DCS pacing were similar and more effective than DSA and BiA pacing in preventing AF.