Predicting the arrhythmogenic foci of atrial fibrillation before and atrial transseptal procedure: implication for cathter ablation

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摘要

Abstract

INTRODUCTION: Use of endocardial atrial activation sequences from recording catheters in the right atrium, His bundle, and coronary sinus to predict the location of initiating foci of atrial fibrillation (AF) before an atrial transseptal procedure has not been reported. The purpose of the present study was to develop an algorithm using endocardial atrial activation sequences to predict the location of initiating foci of AF before transseptal procedure. METHODS AND RESULTS: Seventy-five patients (60 men and 15 women, age 68 +/- 12 years) with frequent episodes of paroxysmal AF were referred for radiofrequency ablation. By retrospective analysis, characteristics of the endocardial atrial activation sequences of right atrial, His-bundle, and coronary sinus catheters from the initial 37 patients were correlated with the location of initiating foci of AF, which were confirmed by successful ablation. The endocardial atrial activation sequences of the other 38 patients were evaluated prospectively to predict the location of initiating foci of AF before transseptal procedure using the algorithm derived from the retrospective analysis. Accuracy of the value <0 msec (obtained by subtracting the time interval between high right atrium and His-bundle atrial activation during atrial premature beats from that obtained during sinus rhythm) for discriminating the superior vena cava or upper portion of the crista terminalis from the pulmonary vein (PV) foci was 100%. When the interval between atrial activation of ostial and distal pairs of the coronary sinus catheter of the atrial premature beats was <0 msec, the accuracy for discriminating left PV foci from right PV foci was 92% in the 24 foci from the left PVs and 100% in the 19 foci from the right PVs. CONCLUSION: Endocardial atrial activation sequences from right atrial, His-bundle, and coronary sinus catheters can accurately predict the location of initiating foci of AF before transseptal procedure.

This may facilitate mapping and radiofrequency ablation of paroxysmal AF.