A new electrocardiographic algorithm using retrograde P waves for differentiating atrioventricular node reentrant tachycardia from atrioventricular reciprocating tachycardia mediated by concealed accessory pathway.

陳亦仁

Tai CT;Chen SA;Chiang CE;Lee SH;Wen ZC;Chiou CW;Ueng KC;Chen YJ;Yu WC and Chang MS

摘要
Abstract

Objectives. The purpose of this study was to use an electrocardiographic (ECG) algorithm, derived from the results of radiofrequency ablation, to discriminate atrioventricular node reentrant tachycardia (AVNRT) from atrioventricular reciprocating tachycardia (AVRT) and to localize a concealed accessory pathway, prospectively.

Background. Information about ECG criteria for differentiating AVNRT from AVRT is limited and has not been confirmed by surgical or catheter ablation.

Methods. Four hundred six ECGs (obtained from 406 different patients) that demonstrated narrow QRS complex (<0.12 s) supraventricular tachycardia with an RP´ interval less than the P´R interval or pseudo r´ wave in lead V1 or pseudo S wave in inferior leads, or both, were examined, and the results were confirmed by radiofrequency catheter ablation. The initial 226 ECGs were analyzed to develop a stepwise algorithm, and the subsequent 180 ECGs were prospectively evaluated by the new algorithm.

Results. The presence of a pseudo r´ wave in lead V1 or a pseudo S wave in leads II, III, aVF indicated anterior-type AVNRT with an accuracy of 100%. With the difference of RP´ intervals in leads V1 and III >20 ms, posterior-type AVNRT could be differentiated from AVRT utilizing a posteroseptal pathway with a sensitivity of 71% (95% confidence interval [CI] 55% to 89%), a specificity of 87% (95% CI 67% to 97%) and a positive predictive value of 75% (95% CI 56% to 91%). According to the polarity of retrograde P waves in leads V1, II, III, aVF and I during AVRT, the concealed accessory pathway could be localized to one of the nine regions on the atrioventricular annuli with an accuracy of 75% (for a right midseptal pathway) to

93.8% (for a left posterior pathway). Overall, the new algorithm had an accuracy of 97.8% in discriminating AVNRT from AVRT and 88.1% in localizing a concealed accessory pathway, prospectively. Prediction was incorrect in only 15 patients (9.1%).

Conclusions. The new ECG algorithm derived from the analysis of retrograde P waves during tachycardia could provide a criterion for differential diagnosis between AVNRT and AVRT and for predicting the location of concealed accessory pathways.