[gw22-e0990]

Objectives This study sought to construct an algorithm to differentiate left atrial from right atrial tachycardia foci on the basis of surface electrocardiograms (ECGs). The present study therefore sought to analyse P wave configuration in patients with atrial tachycardia who underwent successful catheter ablation. Our goal was to differentiate ectopic foci originating in left or right atrium on the basis of surface ECG findings.

Methods A total of 37 patients with atrial tachycardia due to either abnormal automaticity or triggered rhythm underwent detailed atrial endocardial mapping and successful radiofrequency catheter ablation of a single atrial focus. P wave configuration was analysed from 12-lead ECGs during tachycardia either spontaneous or pharmacologically induced atrioventricular block. P waves inscribed above the isoelectric line (TP interval) were classified as positive, below as negative, above and below (or conversely, below and above) as biphasic and flat P waves as isoelectric (0). To calculate the PRI index (PR interval/PP interval) evaluated the variation of conduction upon the atrioventricular and to calculate the PCI index (P width/PR interval) evaluated the variation of conduction in atrial.

Results In 29 patients the tachycardia was located in the right atrium: crista terminalis (n=3); right atrial appendage (n=4); lateral wall (n=4); posterior right atrium (n=4); tricuspid annulus (n=2); near the coronary sinus (n=3); aorta non-coronary sinus (n=5) and superior vena cava (n=3) ovalfossa (n=1). In 8 patients, atrial tachycardia was located in the left atrium: at the entrance of the right (n=3) or left (n=2) superior pulmonary veins; left inferior pulmonary vein (n=1); base of left atrial appendage (n=1); and high lateral left atrium (n=1). However, analysis of P wave configuration showed that leads aVL and V1 were most helpful in distinguishing right atrial from left atrial foci. The sensitivity and specificity of using a positive or biphasic P wave in lead aVL to predict a right atrial focus was 96.4% and 50%, respectively. The sensitivity and specificity of a positive P wave in lead V1 in predicting a left atrial focus was 100% and 72.4%, respectively. The amplitude of lead II III and aVF are prominently larger in left atrial tachycardia. The PCI values which was located in coronary sinus, non-coronary sinus and lateral wall are 0.23, 0.26 and 0.24, the PRI values are 0.43, 0.43 and 0.41, respectively. There is significant decrease in PCI value than other sites of tachycardia, $p<0.05$. The PRI and PCI values of right atrial appendage, and right superior pulmonary veins are mostly in all sites ($p<0.05$), 0.49 and 0.55 in right atrial appendage, 0.51 and 0.43 in posteroinferior right atrium, and right superior pulmonary veins are 0.47 and 0.53.

Conclusions. (1) P waves in lead I and aVL were most helpful in distinguishing right atrial from left atrial foci. (2) Leads II, III and aVF were helpful in providing clues for differentiating superior from inferior foci. (3) The PCI was mostly less in the tachycardia when located in atrial septum area, and the mostly large in right atrial appendage, and than others was posterior right atrium. (4) The P width of the right atrial appendage was maximum, near the atrial septal minimum. That is say PCI and PRI index was helpful to predict site of tachycardia origin.