

Sequential changes in left ventricular dyssynchrony in patients with pacemaker implantation.

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Introduction: Long term RV apex pacing can induce left ventricular dyssynchronous contraction and pacemaker induced dyssynchrony is associated with adverse left ventricular remodeling and dysfunction. But little information has been known about sequential change of ventricular dyssynchrony in patients with pacemaker. **Methods:** We enrolled 179 patients (male 40.4%, Age 67.7 ± 13.6 yr) underwent permanent pacemaker implantation. Pacing sites were all RV apex. Presence of mechanical interventricular dyssynchrony was evaluated by color coded tissue doppler examination in echocardiography. We checked sequential electrocardiography, laboratory and echocardiographic findings. We analyzed relationship between duration from pacemaker implantation and severity of mechanical dyssynchrony. **Results:** Mean follow-up time was 725 days. Intraventricular dyssynchrony defined by echocardiographic estimation was not changed significantly (34.4%, 34.9%, $p=0.882$). Septal to posterior dyssynchrony was not changed significantly (2.1 %, 2.7%, $p=0.656$). Septal to lateral dyssynchrony was changed significantly (53.0%, 30.0%, $p<0.001$). Left ventricular ejection fraction was not changed (62.0 ± 7.3 %, 61.8 ± 8.0 %, $p=0.722$). Tricuspid regurgitation increased mildly (grade 1.04, grade 1.15, $p=0.011$). QRS width was not different during follow-up (149 msec, 151 msec, $p=0.228$). **Conclusion:** Definite LV systolic dysfunction was not verified in patients with RV pacemaker. Pacemaker related tricuspid regurgitation was aggravated as time went by. Paradoxically, septal to lateral dyssynchrony was improved during follow-up. In patients with pacemaker implantation, initial left ventricular dyssynchrony was maintained except septal to lateral dyssynchrony. The lesion why such phenomenon occurred should be evaluated.

Usefulness of ECG for The Prediction of Right Ventricular Dysfunction and Treatment Strategy In Patients with Acute Pulmonary Thromboembolism

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Background and study objective: Electrocardiographic (ECG) findings for the diagnosis of acute pulmonary thromboembolism (PTE) are well known. However, those for the prediction of right ventricular dysfunction (RVD) and for the utilization in treatment strategy in patients with PTE are not fully understood. **Subject and methods:** We analyzed 12-lead ECG, echocardiography and laboratory finding of 71 patients (27 males, 67.7 ± 13.3 years old) with the diagnosis of acute PTE at Chonnam National University Hospital, between July 2008 and July 2011. The diagnosis of PTE was confirmed by computer tomography. The ECG analysis included 21-point ECG score, S1Q3T3 complex, S1Q3T3T4 complex, Q3T3V3 complex and Q3T3T4 complex. Patients with one of the following were considered to have RVD in echocardiogram: RV dilatation, RV free wall hypokinesia, or D-shape LV. Complicated in-hospital events (CIHE) was defined as need for vasopressor, thrombolysis, Inferior vena cava (IVC) filter, resuscitation, the presence of shock index >1 (heart rate/systolic blood pressure) or death. **Results:** A value >3 in the 21 ECG score was the most frequent ECG finding in patients with PTE. The area under the ROC curve to assess 21-point ECG score to predict thrombolysis and CIHE were 0.62 (95% CI 0.59-0.85), 0.61 (95% CI 0.56-0.75). The sensitivity and specificity for the value >3 points in the prediction of CIHE were 93% and 83%. In the ECG and laboratory findings, A value >3 in the 21 ECG score (42.9% vs. 88.9%, $p=0.01$), S1Q3T3 complex (27.3% vs. 45.8%, $p=0.037$) were only statistically significant predictors in RVD. However, S1Q3T3T4 complex and Q3T3V3 complex were only statistically significant predictors for the utilization of thrombolysis (8.8% vs. 27.0%, $p=0.048$; 14.7% vs. 37.8%, $p=0.028$, respectively) and CIHE (12.0% vs. 24.5%, $p=0.02$; 5.6% vs. 34.0%, $p=0.019$). **Conclusion:** Standard ECG might be useful in the prediction of RVD, prognosis, and treatment strategy as well as the diagnosis in patients with PTE.