Predictive Value of q Wave in avL in Left Bundle Branch Block Patients with Organic Heart Disease

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Introduction: Aim to determine the prevalence of q wave in avL, prescribe its characteristics and evaluate the correlation between the q wave in avL and organic heart disease (OHD) verified by gated single-photon emission computed tomography myocardial perfusion imaging (SPECT-MPI) in left bundle branch block (LBBB) patients.

Methods: 1882 LBBB patients were initially involved in the study, and results of SPECT-MPI, coronary angiogram (CAG) and Coronary computed tomography angiography (CCTA) were collected. The prevalence, duration and amplitude of q wave as well as duration and amplitude of QRS complex in avL were measured and analyzed. Characteristics of q wave as well as the relationship between q wave and OHD were determined.

Result: 157 subjects were involved in the study finally, OHD were confirmed by SPECT-MPI, CAG and CCTA in 122 patients. Septal q waves were present in 56(45.9%) LBBB patients (OHD(+))q(+) group) in the organic heart disease group (OHD(+) group). Specificity and positive predictive value of q wave in avL for OHD were 97.1% and 98.2% respectively. Compare with LBBB patients in OHD(+))q(-) group, LBBB patients in OHD(+)q(+) group have larger end diastolic volume (EDV) (P<0.05) and end systolic volume (ESV) (P<0.05) as well as lower left ventricular ejection fraction (LVEF) (P<0.05). Scatter chart and correlation analysis showed no significant linear correlations between duration, amplitude and areas of q wave with ESV, EDV and LVEF verified by SPECT-MPI.

Conclusion: Q wave in avL in LBBB patients indicated left ventricular disease, and was a predictive factor of serious OHD.