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How accurate can electrocardiogram predict left ventricular diastolic dysfunction?

Khaled Elmaghraby
Minia University, Egypt

Background: Heart failure continues to be a major challenge to healthcare; several resting and exercise electrocardiographic parameters have been investigated to predict the Left Ventricular Diastolic Dysfunction (LVDD).

Objectives: We aimed to study different parameters in resting and exercise stress test to evaluate whether they can predict Left Ventricular Diastolic Dysfunction (LVDD).

Methods: One hundred and forty patients, classified into 2 groups according to LVDD, were assessed by measurement of normal and corrected QT interval, T wave peak to T wave End and P wave dispersion in resting ECG. Exercise stress test looking for hump sign (upward deflection of the ST-segment) was done. The relationships between these ECG parameters and LVDD were investigated.

Results: We found significant occurrence of hump sign in patients with LVDD, and there was a significant difference between both groups regarding QTc and P wave dispersion. P wave dispersion was significantly higher in patients with LVDD. Sensitivity and specificity of the ST hump sign in prediction of LVDD were 86% and 78% respectively. We also concluded that P wave dispersion at cut off value about 0.045 ms had the highest sensitivity (sensitivity 98%, specificity 64%) while QTc at cutoff value 0.395 ms had the highest specificity (sensitivity 81%, specificity 79%).

Conclusion: P wave dispersion and hump sign were the most sensitive ECG signs for the prediction of LVDD.

k.maghrby@hotmail.com

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