

THE DIAGNOSTIC ROLE OF PHASE-SHAPED ECGs IN STRESS-TESTING OF PATIENTS WITH ISCHEMIC HEART FAILURE

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Repolarization abnormalities on surface-ECG are well-known indicators and predictors of unfavorable clinical outcomes in coronary arteries disease (CAD). Surface ECG presents only limited and non-specific data of repolarization changes provoked by myocardial ischemia. Visualization of dynamic ECG-trackers in phase-oriented space during 6-minutes walking test provides additional accurate information about repolarization abnormalities.

Aim of the study. To evaluate the additional diagnostic possibilities of phase-shaped ECG analysis in stress-testing of patients with ischemic heart failure.

Methods. Index of T-wave symmetry, T-wave dispersion, βT index and QRS/T spaces ratio were analyzed. Simultaneous recordings of surface ECG were also performed.

Results. 212 patients were enrolled to the study. Index of T-wave symmetry and βT index haven't shown any beneficial results of sensitivity (73% vs. 81%; $p \geq 0.05$) and specificity (78% vs. 69%; $p \geq 0.05$) comparing with typical signs of ischemia on surface ECG (ST-segment deviation and/or T-wave changes). T-wave dispersion resulted in higher levels of sensitivity (82% vs. 64%; $p \leq 0.05$) but not specificity (72% vs. 67%; $p \geq 0.05$) as well, as QRS/T spaces ratio: sensitivity (76% vs. 58%; $p \leq 0.05$) and specificity (68% vs. 71%; $p \geq 0.05$). The lowering of QRS/T spaces ratio (cut-point is $\geq 10\%$) correlated with the distance covered in 6-minutes walking test ($r_s = 0.682$; $p \leq 0.05$).

Conclusions. T-wave dispersion and QRS/T spaces ratio of phase-shaped ECGs are useful in detecting repolarization abnormalities in stress-testing due to their higher sensitivity.