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Values of heart rate turbulence parameters and the other prognostic indicators obtained from 24 hour ECG Holter monitoring in myocardial infarction survivors treated with primary coronary angioplasty

T. Rechciński, M. Zając, M. Kurpesa, E. Trzos, M. Krzemińska--Pakuła
Second Chair and Clinic of Cardiology, Medical University of Łódź (Łódź, Poland)

Assessment of heart rate turbulence (HRT) is a newly improved tool for stratification of prognosis after myocardial infarction. Pathological values of two parameters describing HRT (turbulence onset — TO, turbulence slope — TS) in these patients correlate with other predictors of sudden cardiac death.

The aim of this study was to evaluate if pathological values of HTR correlate with ECG Holter monitoring based data reflecting heart rate variability (HRV) abnormalities, presence and number of arrhythmias or ST segment deviations.

Materials and methods: 89 patients (pts) with acute myocardial infarction, after successful primary coronary angioplasty, with sinus rhythm during hospitalization in coronary care unit were enrolled into the study. 72% of pts were males, mean age 57 ± 10.5. Analysis of 24-hour ECG monitoring including: HRT and HRV analysis, number and quality of supraventricular and ventricular arrhythmias (couplets, salvos, ventricular tachycardia), and analysis of ST segment deviations was performed during the second day of hospitalization. c^2 test was used for statistical analysis.

Results: 5 pts had TO > 0% (5.6%) and 8 pts had TS < 2.5 ms/RR (9%). Comparing the patients with TO > 0% and those having TO Ł 0% we found, that the former had average mean heart rate 75/min and the letter — 65/min, p = 0.0365. Apart of similar association of TS < 2.5 ms/RR with higher mean heart rate than TS ł 2,5ms/RR (84/min *vs.* 74/min, p = 0.0042) additionally significant difference was found for average minimal heart rate (71/min *vs.* 62/min, p = 0.019), triangle index (14 *vs.* 21, p = 0.034), standard deviation of RR intervals — SDNN (51 ms *vs.* 76 ms, p = 0.0409) and number of supraventricular extrasystoles which was lower in the group with TO > 0% than in those having TO Ł 0% (199 *vs.* 976, p = 0.041).

The differences in remaining parameters between patients having values of TO and TS defined as “normal” or “pathological”, such as maximal heart rate, number of ventricular extrasystoles, couplets, salvos, ventricular tachycardias, elevations or depressions of ST segment did not reach statistical significance.

Conclusion: In the group of patients with myocardial infarction successfully treated with primary coronary angioplasty the results of HRT analysis are strongly associated with results of HRV analysis. This observation confirms the usefulness of HRT for assessment of activity of autonomic nerve system in regulation of heart rate in myocardial infarction survivors.