HEART RATE VARIABILITY AND LEFT VENTRICLE VOLUMETRIC INDICES IN PATIENTS AFTER THE ACUTE Q-WAVE MYOCARDIAL INFARCTION

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Purpose. To estimate interrelations between heart rate variability (HRV) and left ventricle volumetric indices in patients after the acute Q-wave myocardial infarction (Q-AMI).

Materials and methods. 213 male patients in the average age of 52,0±9,1 y.o. survived after the primary Q-AMI were included into the study. All patients underwent Holter ECG monitoring (HMECG) with the estimation of HRV and transthoracic echocardiography. HMECG in all cases were performed in normal conditions, on standard therapy without any specific restrictions on 10–14 day of the Q-AMI. Standard therapy included antiplatelet agents, beta-blockers, ACE inhibitors or ARB, statins in individually matched doses, nitrates (if necessary) and amiodarone (if necessary). Interpretation of HRV parameters was made in accordance with the recommendations of the ESC working group and the NASPE (1996) with estimation of SDNN, SDANN, RMSSD and pNN50. As a decrease in the total HRV, a reduction of SDNN≤100 ms was assumed. Statistical analysis was performed using nonparametric Spearman R correlation test. Differences were considered significant for $p<0,05$.

Results. Analysis of the features of the baseline level of HRV and its correlation with left ventricle volumetric indices was carried out. It was revealed negative correlation between level of SDNN and LVEDD ($R=–0,197$; $p=0,005$); LVESD ($R=–0,244$; 0,001); LVEDV ($R=–0,172$; $p=0,014$); LVESV ($R=–0,280$; $p=0,001$); level of SDANN and LVEDD ($R=–0,236$; $p=0,001$); LVESD ($R=–0,251$; 0,001); LVEDV ($R=–0,211$; $p=0,003$); LVESV ($R=–0,299$; $p=0,001$); level of RMSSD and LVESD ($R=–0,251$; 0,001); and level of pNN50 and LVEDD ($R=–0,167$; $p=0,018$); LVESD ($R=–0,239$; 0,001); LVESV ($R=–0,207$; $p=0,003$). All four analyzed HRV parameters also show the positive correlation with LVEF: SDNN ($R=0,287$; $p=0,001$); SDANN ($R=0,283$ $p=0,001$); RMSSD ($R=0,161$; $p=0,022$) and pNN50 ($R=0,229$; $p=0,001$).

Conclusions. Obtained results show the unity of pathologic processes of myocardial remodeling in patients after Q-AMI and presence of interrelation between the increases in the size of left ventricle and decreasing of its contractility and parameters of heart rate variability.

HRV parameters and LV volumetric indices

Parameter	Mean±St.Dev.	Parameter	Mean±St.Dev.
LVEDD, cm	5,73±0,70	SDNN, ms	101,41±35,83
LVESD, cm	3,92±0,82	SDANN, ms	87,99±31,69
LVEDV, ml	156,06±51,73	RMSSD, ms	27,19±21,17
LVESV, ml	82,15±40,84	pNN50, %	6,11±9,85
LVEF, %	48,67±11,54		