Nervous System

10.6 Spectral HRV Components and Pharmacological Treatment in

Subjects with Syncope

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Introduction. Pharmacological control by SNA on cardiovascular system has direct mechanism (on baroreceptors) or indirect mechanism (vascular distensibility, sympathetic muscular nervous system, cardiac conduction velocity). Evidence are available on the effect of beta-blockers or ACE Inhibitors/ARB vs placebo.

Methods. Our study analyzed the modifications of baroreflex sensitivity, measured by spectral analysis of heart rate and blood pressure variability. 102 subjects without pharmacological treatment (NT), 17 subjects with ACE-inhibitors (ACEi) and 10 subjects with beta-blockers (BB) were enrolled from syncope ambulatory and for each subject was performed head up tilt test standard: 10 minutes in supine (S) and 30 minutes in passive upright position (U, 70°). Low frequencies components (LF), high frequencies components (HF) and non-LF-non-HF components were measured by spectral analysis of heart rate and blood pressure variability. BRS-LF (calculated as the root square of the ratio of HRV low frequency component/BPV low frequency component) and BRS-HF (calculated as the root square of the ratio of HRV high frequency component/BPV high frequency component) were considered as an index of baroreflex sensitivity.

Results. Tilt test was positive in 27 NT, 0 BB and 1 ACEi. Sympatho-vagal balance (LF/HF) seems to be lower in BB vs NT and ACEi either in S and U position. BRS-LF in S is the same in all three groups, but in BB it decreases more than in others. BRS-HF is higher in U either in BB and ACEi versus NT. Correlation between cardiac frequency (RR) and BRS-LF or BRS-HF present in NT ($r=0,329$ - $r=0,369$; $p<0,001$), are lost in BB, where gets back in U only for BRS-HF ($r=0,533$, $p<0,01$). The correlation is not modified in ACEi ($r=0,589$ - $r=0,774$; $p<0,001$). U-VLF is low in BB and ACEi versus NT, especially in U (739 ± 608 e 706 ± 459 vs NT 1233 ± 1296 ; $p<0,01$).

Conclusions. BB treatment reduces sympatho-vagal oscillation and nonautonomic components in the domain of HRV. The last one seems to be reduced also by ACEi, where sympatho-vagal balance is preserved. In BB, the loss of correlation between RR and BRS suggests a complex pharmacological action, not yet understood. Lesser extension of nonLF-nonHF components (U-VLF) seems to be in correlation with lesser positive response to tilt-test.