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THE ANALYSIS OF CARDIOVASCULAR RESPONSE ON TILT TABLE TEST IN DIAGNOSIS OF SYNCOPE

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ABSTRACT

In our research we proposed an example of nonlinear analysis of three signals: ECG, sBP (systolic blood pressure) and TPR (total peripheral resistance) [1]. The signals were measured simultaneously with the head up tilt table test (HUTT). The tilt tests were performed with Task Force Monitor device. We examined patients recommended to diagnosis of vasovagal syncope (VVS) [2]. We used entropy of measured signals for description of the mechanism of VVS [3, 4].

We examined 30 patients, that had the faint episode and were recommended to tilt table test. All examined patients fell in syncope in the supine test. For each patient the recorded values of RR, sBP, TPR were analyzed in moving windows of width of 100 and 250 points. We determined entropy (ApEn, SampEn) for each window. We also analyzed the value of entropy of recording signals in three segments (I-supine position, II-start tilt, III-before faint) and afterwards we preformed multiple comparison of the results.

The comparison of ApEn and SampEn between segments I, II, III shows, that there is a statistically significant difference between entropy in segment I and II, I and III for the RRI data. In case of sBP there is no any significant difference between the segments. The comparisons of the entropy for TPR data shows, that there is statistically significant difference between segment I and II, I and III. We concluded that the regularity of RRI and TPR is different in supine position and before the syncope.

The results obtained in moving windows, show that the values of entropy of TPR significantly decreased approximately from 1.6 to 0.4 and the decrease occurs 50 seconds before the syncope. The changes of TPR are, apart from sBP and RR, the predictor of VVS. The results suggest that the syncope is connected with the minimum value of the entropy of TPR and sBP, but it needs further investigation.

REFERENCES

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