

**A possibility of the initial diagnostics by the analysis of
RR-intervals of ECG**

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For various kinds of cardiac diseases we analyze long sequences of RR-intervals of electrocardiograms (ECGs) [1]. They were obtained from patients which suffer some cardiac deceases and were observed in Bakulev Rs Scientific Center of Cardiovascular Surgery. As a result of this analysis it has been shown that the dimensional characteristics used allow to resolve the inverse problem, that is, to divide patients into groups according to their cardiac diseases [2]. The increase and/or decrease of the degree of chaos has been observed in the ECG according to the disease. We wish to stress that this conclusion has been made on the basis of the analysis of sufficiently long time series for several patients from each group.

The use of dimensional characteristics of ECGs makes it possible to automatize the process of the initial diagnosis for patients with several cardiac pathologies. Solution of this and similar questions would allow us to find the boundary beyond of which chaotic processes (that are inherent in the cardiac rhythm) do not already correspond to the healthy state but uniquely indicate to pathologies. In this work we also discuss the results obtained for patients free from cardiac pathologies.

Finally, we would like to emphasize the following. It is well known that cardiac pathologies are not necessary caused by the cardiovascular system disfunction; they may also be a result of other diseases. This makes the investigation of so-called latent cardiac pathologies and indirect disturbances in the cardiac rhythms of a special importance. Usually it is not possible to detect such latent pathologies by the standard approaches. Application of nonlinear dynamical methods seems to be rather promising.

[1] Mironyuk O., Loskutov A. "Detection of cardiac pafhology be means of dimensional characteristics of RR-intervals of ECG", Biophysics (2006), V. 51, 1, p. 144-150.

[2] A. Loskutov, O.Mironyuk "Time series analysis of ECG: A possibility of the initial diagnostics", Int. J. of Bifurcation and Chaos, 2006, accepted.