THE TOPOLOGICAL APPROACH FOR THE DESCRIPTION OF ECG CHANGES IN THE TASK OF THE MONITORING OF TRANSITIONAL CRITICAL STATES IN CARDIODYNAMICS

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Today the problem of automated detection of life-threatening myocardium critical states based on the ECG signal analysis has got a special significance. With each passing year, the devices for monitoring the myocardium functionality become more compact, efficient and cheap, allowing their widespread use in the near future as diagnostic devices for personal use. One of the major obstacles in the development of such devices is that in many cases the clinical electrocardiographic signs do not display distinct indicators and, moreover, the correct diagnosis depends on physician's individual experience [1-3]. It is well known that the problem of the automated transitional cardiodynamic real-time analysis is of substantial practical interest. And the difficult target is to monitor the «borderline» critical states of the myocardium in order to control the level of the development of the observed cardiac pathology. In this regard, the search for new approaches to the detection of myocardium critical states on the ECG is of great practical importance.

In the report we will present the developed approach to the detection of critical states in transition cardiodynamics based on the use of topological methods and wavelet analysis of ECG signal [4]. The possibilities of practical application of this approach and the open areas for further theoretical and clinical studies will be discussed in detail. In particular, we will touch upon the subject of the applicability of linguistic methods to the problem of describing the complex dynamics of ECG changes, an electrocardiogram being considered as «text».

References
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