New approaches to stratification of patients by the level of sudden cardiac death risk using the data on energies of cardiac micropotentials obtained by nanosensor-based hardware and software complex. (English) [Zbl 07387510]


Summary: The problem of human cardiovascular diseases is one of the critical health problems. The most serious aspect is sudden cardiac death (SCD). A new method and approaches to recording micropotentials by the nanosensor-based hardware and software complex are elaborated for dynamic personalized monitoring of the heart. Tables with data on functioning of the patient’s heart during multiple examinations are automatically generated in one Excel file. The study presents results on cardiac micropotentials in groups 1A – volunteers died from cardiogenic shock, and 1B – volunteers with acute myocardial infarction (AMI) survived. Relative average values of the total energy for all time intervals are given in the following amplitude ranges: (0.5–1.0) µV; (1.1–3.0) µV; (3.1–5.0) µV; (5.1–20.0) µV in a dynamic pattern. The results are divided into 3 ranges: the total energy value of more than 150%, less than 50% and in the range of (50–150)%. The most significant changes in the micropotential energy by a factor of (4, 5) can be observed in the range of (5.1–20) µV. It is shown that the excess of the micropotential energy over 150% and the decrease in the micropotential energy below 50% are predictors of SCD.

For the entire collection see [Zbl 07317075].

MSC:
93-XX Systems theory; control

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References:


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