

PREDICTION OF THE PATIENT STATUS ASSESSMENT BASED ON RESULTS OF BIOIMPEDANCE RESEARCHES IN TERMS OF LIMITED DATA CAPACITY

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Papers [1, 2, 3] observed the problem of high death rate among oncological children. Assumptions about information value of the results obtained by bioimpedance research of the human body composition (BRHBC) became the grounds for conduction of an experimental research. It consisted in the assessment of patients' condition dynamics, using seven criteria, proposed by cancer specialists. The conducted computer research resulted in the base of prediction knowledge (BPK) expressed in lists of the most informative combinations of BRHBC indices, which were typical for each of the compared condition classes (with complications or without ones). The obtained results give an opportunity to predict patient's condition on the 100 day after the spinal cord transplantation and to estimate the patient's resource before this procedure. The elaborated prediction rules for each of the criterion were appraised considering quantity (and degree) of coincidence of BPK prognosis with verified medical assessment. The conducted research allows the following conclusion:

1. to compare the condition classes, seven criteria of patient's condition assessment were used;
2. groups of significant bioimpedance indices, corresponding each criterion, were revealed;
3. the prospects of using the bioimpedance researches for this class of problems were confirmed;
4. the prospects of elaboration the algorithm for prediction with floating values of fixed point and for detection of prediction horizon were determined.

References.

1. Биоимпедансный анализ состава тела человека. / Д.В. Николаев и др.–М.:Наука, 2009;
2. Body composition and phase angle in Russian children in remission from acute lymphoblastic leukemia. /G.Ja. Tseytlin и др. – J.Phys.:Conference Series, 2010.224:012116;
3. Федотов М.О., Карп В.П. Построение прогнозирующего правила оценки состояния пациента по результатам биоимпедансного исследования // Девятнадцатая международная конференция «Математика. Компьютер. Образование». Тезисы. – Дубна, 2012. стр.96.