Comparative assessment of methods high-frequency ultrasound Doppler and laser Doppler flowmetry in the study of microcirculation during load test

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The study of quantitative and qualitative parameters of a peripheral blood flow is a current problem, as an outcome and prognosis of many diseases depend on function and compensation abilities of the microcirculation system (MCS). The studies of the human MCS are associated with a number of technical difficulties. The MCS has a complex architectonics and high lability, which complicate obtaining the data on blood flow.

The laser Doppler flowmetry (LDF) and high-frequency ultrasound dopplerography (HFUD) are used for research of the MCS parameters. The very important to carry out functional tests, which makes it possible to assess the reactivity micro vessels.

The work objective is a comparison of results and determination of the data correlation’s degree in the research of blood flow parameters in the MCS, obtained together the LDF and HFUD methods before and during the recovery period (RP) after exercise on a bicycle of 10 subjects.

During the RP it was revealed 3 types of reaction: the first is characterized by well-defined periods of a short-term decrease in indicators of blood flow velocity and increase of a peripheric resistance; the second - by a significant change in blood flow dynamics; the third - by a less variability without expressed blood flow fluctuations, but prevalence of a shunt blood flow is observed after 15 min of the RP.

The study identified a good comparability of the results, obtained by the LDF and HFUD methods.