FIBER-OPTICAL TECHNOLOGY FOR ANALYSIS OF VASCULAR SYSTEM

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Main function are based on the photometrical transformation of the biomedical information about the state of vertebral vessels with using of the optoelectronic sensor which works in the infra - red range. This sensor fixates the rate of the microcircular and hemodynamic violation in the affected vessels by the comparing the received signals.

The complex contain optical sensor, converter for comparative analyzing and display of transformed biomedical signals. It is possibility of connection sensor by computer. Functional possibilities are widen: save of biomedical signals in files, processing (scale, filtration, comparative and correlation analysis, draw up graphics and diagrams on the screen and printer).

The complex on essential new hardware-software means permits:

— arbitrary artery pulse wave recording which makes possible diagnostics of different cardiovascular diseases;

— hemodynamics and arterial blood speed measurement whish makes possible exact diagnostics of cardiovascular disease;

— pulse frequency measurement;

— pulse arrhythmia measurement.

To estimate local microcirculation of vessels by indexes of photopletismographical signals, the optoelectronic complex for the analysis of cordial-vascular system condition is developed and reduced to clinic practice. As a result of registration of the pulse wave by optic method there has been received the photopletismograms, which are characterized by amplitude and temporal characteristics.

The optical method of microcirculation appraisal in jaw-facial region is opened. The optoelectronic complex is submitted which works in infrared area of a spectrum and registers a degree of microcirculation in jaw-facial region. The recommendations for use of the given method by the doctor are given.

Advantages

The complex allow to investigate general, regional and local hemodynamics regularities, to find pathological processes followed by changes in tissues and organs. The developed methods allows to find pathological processes followed by changes in tissues and organs, define local blood microcirculation and state of the vascular system, blood saturation, make osteohondrosis diagnostic.

Economy

The developed optoelectronic complex gives the possibility to analyze hemodynamic indexes of vascular-cardial system condition, forecast the run of pathologic process.

Application

The optoelectronic complex are introduced on the basis of Vinnytsya National Medical University (department of therapy), also it may be used to hospitals and polyclinics.

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