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A Mathematical Modeling of Processes in Applied Hydro- and Hemodynamics

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Cardiovascular system (CVS) is a complex unity of vessels with different calibers, which are gathered in a closed system that is characterized by constant and changeable parameters of vital activity and normally it has high adaptive capacity to internal changes and external reconstructions of the environment.

The main task of CVS is to provide continuous blood supply for organs and systems in the human organism. "Adducting" and "abducting" vessels play important role in the human organism; their function is like of tubes of water supply system but with one distinction, they have one intermediate link - microcirculation subsystem.

Unlike water supply system CVS has changeable parameters depending on internal and external conditions. That is why CVS was not accessible for lifetime examination for a long time.

Today even in a theory physicians don't have a single integrated approach to the vascular system.

Ability to find atherosclerotic plaques and thromboembolus with newest diagnostic methods provoked a new field in medicine - angiosurgery and cardiosurgery. But why some postoperated patients often have temporary improvement and often relapses occur?

This fact says for deeper disorders in the whole CVS as a complex system of interconnected tubes of different caliber with specific features of their walls and biophysical properties of blood that can be called as a liquid only conditionally.

The time requires creation of a single technological complex for integral life-time dynamic diagnostics of CVS in a patient in one-moment on various regional and systemic levels with an output of analytically processed results for clinical interpretation and assessment of CVS reconstructions in norm and in pathological states by a physician.