PROBLEM THE EXPLORATION OF QUANTITATIVE CHARACTERISTICS REVERSIVE OF BLOOD FLOW

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ABSTRACT:

The presence of reverse flow in the trunk of saphenous vein during the breath holding test is a qualitative marker of chronic venous insufficiency. However, there is still no consensus by gradations of quantitative characteristics of the stream in the affected veins according of the clinical classes of chronic venous diseases C2-C6 ([1]).

The aim of the study. To explore the possibility of obtaining of quantitative characteristics of reversive blood flow in affected saphenous veins in varicose according of the clinical classes of chronic venous diseases.

Materials and Methods. The method of ultrasonic duplex scanning with modes of color Doppler mapping and power Doppler was applied. The study was conducted on an ultrasonic scanner of the expert class. Flows were visualized in real time. We used the results of qualitative analysis when visualising of reversible flows (reflux) inside the trunk of the great saphenous vein in varicose (Fig. 1, left).

Results. When designing an algorithm we guided by the following provisions. 1. The amplitude-time characteristics of streams must be presented in quantitative interpretation. 2. These characteristics match to the signals of spectral Doppler. Curves of signals of spectral Doppler are synchronized with the flow reversal wich we can visualized (Fig. 1, right). What of the data serial processing of dopplerograms from five groups of patients, associated with clinical disease classes we are required to obtain? This is average values for each group: of time from the start of the functional test before the start of reflux; the duration of retrograde flow; of the duration of antegrade flow in the early period after the completion of the performance functional test; extreme values of the linear velocity of blood flow; flow acceleration, of flow velocity integral (total and in different phases), of the ratio of measured values. It is hypothesized: the acceleration of retrograde flow and/or the ratio of time from start of the functional test prior to beginning of the reflux and the rise time of the leading front of the retrograde flow in sick vein are associated with the degree of insolvency distally located venous valve of this vein.

Conclusion. Theoretically have been showed the possibility of quantitative characteristics of reversive blood flow in the affected veins in chronic venous insufficiency. Implementation of the task with greater efficiency will allow determine clinical class of patients.
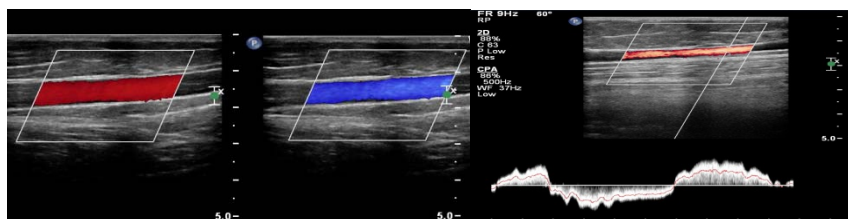
Fig. 1 Visualization of flow: retrograde - red, antegrade - blue (left). Signal of the spectral Doppler synchronized with the blood flow wich we can visualized (right)

References

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