

EVALUATION OF COMMON CAROTID ARTERY BLOOD FLOW VELOCITY PATTERNS
BY FREQUENCY ANALYSIS OF DOPPLER SIGNALS

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The purpose of our study was to assess quantitatively the changes of the Doppler spectrum, dependent on the progress of atherosclerotic cerebrovascular disease. Ultrasonic examinations of the common carotid artery blood flow were performed using C.W. Doppler method. The acoustic Doppler signals were tape recorded, then averaged and analysed on the narrow-band frequency analyser in the frequency range from 0 to 5 kHz or 10 kHz. The percentage harmonic content in the bands of 1 kHz width have been assessed by means of computer. Two groups of healthy subjects /age 16-28 and 51-83/ and a group of 29 patients with stroke /age 42-81/ have been examined.

There were considerable differences between the frequency distribution of the Doppler spectra of healthy young subjects, of subjects aged over 50, and of patients with cerebrovascular insufficiency. In young persons the frequency range from 0 to 5 kHz was generally found, and 40% of the spectral distribution diagrams areas were covered by frequency band 1-2 kHz. In elderly persons 1-2 kHz band was covering 32,9% and in patients - 28,2% of the diagrams areas. In parallel, the frequency areas 0-1 kHz were increasing from 35,9% in young to 50,4% in elderly subjects and to 66,5% in patients with stroke. These changes, accompanied by narrowing of the spectra, reflect the slowing down of the carotid artery blood flow, advancing with age and progress of atherosclerosis.