

МАТЕРИАЛЫ КОНФЕРЕНЦИИ  
И ШКОЛЫ

ONTOGENETIC FEATURES OF AUTONOMOUS REGULATION  
OF THE CARDIOVASCULAR SYSTEM IN HUMAN

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The objective of this work was to study the autonomous regulation (AR) of muscle effectors (ME) of the cardiovascular system (CVS) in people of different ages in order to identify the features of changing the pattern of AR ME of CVS in elderly people under the sudden influence of stressful conditions on them.

The method of arterial piezopulsometry developed by us was applied. As a universal parameter, the variability of which evaluated the nature of the autonomous regulation of heart rate (HR) and the value of pulse blood pressure – PP [mm Hg], we used the point of absolute positive extremum on the differential graph of the pulse wave. The value of this parameter was considered as a measure of the contractility of the left ventricle of the heart (LVH) and was estimated as the maximum rate of systolic increase in PP (VmaxPP [mm Hg/s]). The spectral power of the oscillations of the parameter VmaxPP [(mm Hg/s)<sup>2</sup>], as well as the HR value according to the TNN parameter [ms<sup>2</sup>], were measured. We studied the central (*a.carotis*) and peripheral (*a.radialis*) arteries of 119 volunteers aged 18 to 86 years.

It is shown that in the process of human ontogenesis, the nature of the AR functions of ME CVS changes. In young people, ME stimulation is effected mainly by exposure to adrenergic receptors of the mediator of the sympathetic efferents of the ANS, norepinephrine. In people over 75 years of age, such stimulation is replaced by a slower, but enhanced activation of catecholamines, which ensures the maintenance of the necessary level of blood circulation in conditions of an increase in oxygen deficiency by age. The unexpected effect of negative stressors on older people can disrupt the nature of AR ME of CVS and trigger the excessive sympathetic activation of ME, provoking the occurrence of tachyarrhythmias (with extrasystoles, atrial flutter, etc.), and simultaneously a decrease in low-frequency activation by catecholamines. It was shown that, despite a significant increase in the activity of the parasympathetic efferents of the ANS, the inotropic function of the LVH myocardium was enhanced, which increases the risk of myocardial infarction or stroke.

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