

CRITERIA FOR ABNORMALITIES IN THE VISCERAL ORGANS AS A RESULT OF ISCHEMIA-REPERFUSION INJURY OF THE SPINAL CORD TISSUE

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Termination or reduction in the volume of aorta's blood flow at various levels (chest, abdomen) is accompanied by serious consequences for the organism. Circulatory disorders of the spinal cord tissue are the result of posttraumatic aortic pseudoaneurysms, tumor growth, surgery for removal of thoracic aneurysm or abdominal aorta. More than 25% of the patients have impaired motion function as a result of the spinal cord ischemia [1, 2].

In addition to damaging effects on the central nervous system, temporary cessation of blood flow in the aorta is a damaging factor to the underlying organs and organ systems. In addition, it is logical to assume that the consequences of disturbances in the central nervous system alter the functioning of the motion and sensory fibers in the peripheral nerves that innervate various organs. Such changes trigger a number of pathophysiological processes: pain, inflammation, release of free radicals, apoptosis, structural and functional changes of innervation of target organs [1, 2].

Based on the above, the main objective of our study was to investigate the changes of the internal organs functioning in animals exposed to short-term (15 min) occlusion of the thoracic aorta, followed by (1 hour) reperfusion period (n=6). Irregularities in the visceral organs were examined by recording changes in impulse activity of abdominal-aortic plexus' nerve. As a result, the frequency of depression identified sympathetic efferent impulses by 63% to 12.5 ± 4.1 p/s ($p < 0.05$) compared to the background level (33.6 ± 2.4 p/s) by the end of the ischemia period. During reperfusion, the complete restoration of the values of impulse activity was not registered. Frequency electrical discharges remained at 27.6 ± 4.8 p/s (Figure). Thus, occlusion of the thoracic aorta leads to ischemic damage of ganglia tissue, localized at the periphery, in particular abdominal-aortic plexus.

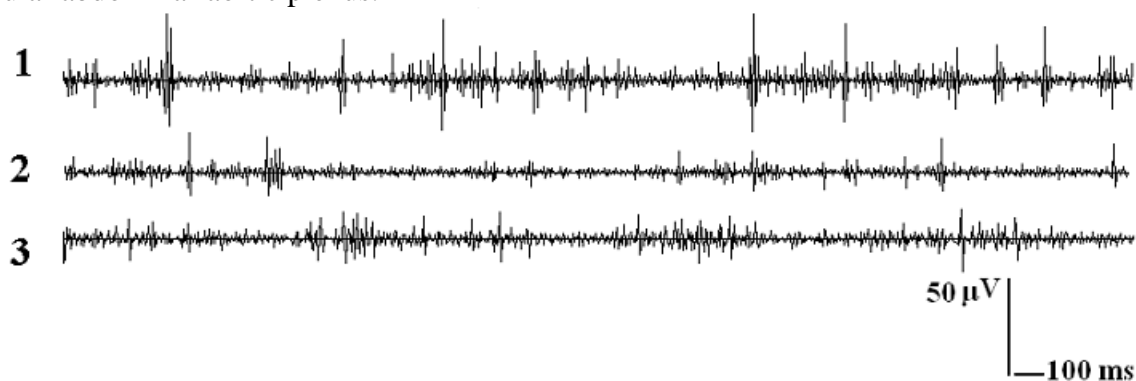


Fig. 1. Impulse activity of abdominal aortic nerve in the normal conditions (1), the end of the period of ischemia (2) and 5 minutes after recovering of blood flow in the aorta (3)

References

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