

Morphological evaluation of local hypothermia effects after spinal cord injury
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A spinal cord injury (SCI) takes 8% of the total injuries. Pathological processes after SCI are accompanied by a number of complications distal to the place of damage. One of the methods to reduce the area of secondary alteration and prevent complications after injury is applying of local hypothermia. In this study Wistar rats were divided into 3 groups (laminectomy with hypothermia, laminectomy with contusion injury, laminectomy with contusion injury and hypothermia). The damage was caused by a shock rod falling on the open spinal cord at the Th8 level. Animals were euthanized on 6 and 24 hours after SCI. 8 micron-thick cryosections were stained with hematoxylin and eosin. Mean cross-sectional area of cavities like defects was counted in posterior horns and white matter at the L2 level. No defects were revealed in the group without contusion at the L2 level. The morphological changes were less dramatic in the group with hypothermia. The size of defects was less both in the white matter and in the posterior horns in the group of contusion injury with hypothermia ($142,39 \pm 68,97 \mu\text{m}^2$ vs. $891,641 \pm 1256,9 \mu\text{m}^2$ group without hypothermia after 24 hours for white matter, $65,18 \pm 135,56 \mu\text{m}^2$ and $74,39 \pm 60,81 \mu\text{m}^2$ for posterior horns, respectively). Obtained data approve a favorable effect of low temperatures on the posttraumatic period and can serve as supplementary treatment to the gene and cell therapy. The study was carried out with the financial support of the Russian Foundation for Basic Research in the framework of the research project No. 17-04-01746.