DYNAMICS OF NEUROMOTOR ACTIVITY IN RATS AFTER EXPERIMENTAL SPINAL CORD INJURY MODELING.

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Introduction. According to the World Health Organization, injuries are one of the most common causes of death among the young population, while in the structure of injury rates among the adult population, spinal and spinal cord injuries account for 0.8 to 20-26.2% of all musculoskeletal injuries with an incidence rate of 0.6 per 1000 people.

The aim of the study. To assess the dynamics of neuromotor activity in rats after experimental spinal cord injury modeling.

Materials and methods. The experiments were performed on 180 male rats using a spinal injury model. Experimental spinal injury is reproduced according to a modification of the standard model of moderate contusion spinal cord injury (Kubrak N.V., Krasnov V.V. 2015). The experimental animals were mongrel sexually mature male rats weighing 200-230 g. The animals were divided into three groups: the first control group consisted of 6 animals that were kept in vivarium conditions during the entire experiment at t = 22° C. The second group consisted of 20 animals whose lumbar spine was injured by a 250 g load from a height of 20 cm. The third group included 20 animals whose lumbar spine was injured by a 250 g load from a height of 40 cm.

Research results. Thus, on the third day after injury, we found a significant decrease in voluntary locomotor activity in rats from the experimental group with spinal cord injury (SCI) and without spinal cord injury (WSCI). However, the severity and duration of locomotor function disorders depended on both the duration of the experiment and the spinal cord injury. Thus, in rats without spinal cord injury on the 3rd day of the experiment, the number of drum movements decreased by 2.32 times ($p < 0.001$), amounting to 14.8 ± 1.3 revolutions, with the value of this indicator in the intact group of rats being 34.4 ± 1.9 rev. However, in subsequent periods, we observed a gradual recovery of the values of this test, i.e. on the 7th day of the experiment, this indicator statistically significantly increased by 1.92 times ($p < 0.01$) relative to the values of the previous study period and amounted to 28.3 ± 1.5 rev. At the same time, this indicator maintained a tendency to decrease relative to the values of intact rats. By the final period of the study (the 14th day of the experiment), this indicator tended to increase and amounted to 30.1 ± 2.1 rev., not significantly different from the values of intact rats.

Conclusions. Thus, the dynamics of neuromotor activity of rats after modeling spinal cord injury showed that by the 14th day of the experiment, the neuromotor activity index tended to increase and did not differ significantly from the values of intact rats.