
МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

COMPARATIVE ELECTROPHYSIOLOGICAL ANALYSIS OF ACTIVATION FEATURES OF THE VESTIBULO- AND RETICULOSPINAL NEURONS IN FROG

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Introduction. The study of various brain structures that control and regulate body movements is an important and relevant direction. Evolutionary, it is especially interesting to study the effect of motor structures on amphibians motoneurons, since they are the least differentiated. The reticulo- and vestibulo-spinal tracts constitute one of the ancient systems of suprasegmental control.

This paper describes the comparative results of an electrophysiological study of the activation features of the vestibulo- and reticulospinal neurons on stimulation of the cervical and lumbar spinal cord in frog, based on previous experiments.

Methods. The experiments were performed on frogs (*Rana ridibunda*) of both sexes using the isolated perfused brain method. The animals were anesthetized with MS-222 solution. A computer analysis of the data was carried out.

Result and discussion. Vestibular and reticular neurons were identified on the basis of exciting postsynaptic potentials (EPSP) arising in response to stimulation of the ipsilateral vestibular nerve and their activation by stimulation of the cervical and lumbar spinal cord. Cells activated only by cervical spinal cord irritation were des-

ignated as C neurons, and cells activated also for lumbar stimulation as L neurons.

During intracellular assignment of the electrical activity of vestibular neurons to nerve stimulation, monosynaptic EPSP with a latent period of 1.5–2.96 ms arose. In the case of reticular neurons, the latent period of EPSP was 2.22–6.82 ms. During stimulation of the spinal cord, antidromic action potentials arose with a short and fixed latent period at different intensities of stimulation. They were characterized by short refractoriness and the ability to reproduce high-frequency irritation. The latent period of vestibular and reticular C neurons was 0.57–3.6 ms and 0.37–1.66 ms, respectively. The latent period of the vestibular and reticular L neurons was 1.3–3.89 ms and 0.51–1.8 ms, respectively. During the data analyze, the distance between the irritation sites of the C and L departments was taken into account.

The axons of the vestibulo- and reticulospinal neurons in frog are monosynaptically in contact with the motoneurons of the cervical and lumbar enlargements. These data indicate the important role of these neurons in the mediation of vestibular and reticular effects on spinal motor mechanisms.