

Neurophysiological monitoring in the rehabilitation of patients with ischaemic stroke

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Introduction: Motor disorders serve as a main reason of disability among the patients suffering from ischaemic stroke (IS). Significant measures to be taken in the neurorehabilitation of patients with poststroke motor disorders (PMD) include strengthening of the mechanisms of brain flexibility by external non-invasive methods, such as therapeutic transcranial magnetic stimulation (TMS). The purpose of the research work was to study the effectiveness of the therapeutic TMS for the patients suffering from PMD at the rehabilitation stage by using neurophysiological monitoring. Materials and methods: Clinical and neurophysiological studies were conducted on 89 patients with hemiparesis after IS. All patients passed a rehabilitation course before and after which a diagnostic TMS was carried out. In 57 patients (the key group) neurorehabilitation included the use of a therapeutic TMS (by the device "Magstim Rapid") by intervention on both hemispheres of brain, also MS of neuromuscular apparatus where hemiparesis is developed. The patients of the control group (32 patients) received only TMS of motor cortex of the affected side. In both groups massage and therapeutic exercises were applied together with MS. Results: After the rehabilitation course motor functions of the patients were improved. After the treatment a significant positive dynamics of neurophysiological indicators was observed in the patients of the key group. At the end of the course, evoked motor response (EMR) threshold was reduced, latency was shortened, and central motor conduction time (CMCT) was reduced in the patients of the key group. Positive increase of EMR amplitude was observed on affected and intact sides ($p < 0,001$). Conclusion: The efficiency of rehabilitation was established for the patients with IS, who received TMS by intervention on both hemispheres of the brain. Neurophysiological monitoring of the rehabilitation process carried out by using a diagnostic TMS allows to control the neuroplastic processes and improve the effectiveness of rehabilitation.