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Functional magnetic resonance for assessing the effectiveness of surgical revascularization after stroke

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The aim of investigation is to value the effectiveness of surgical revascularization using the functional MRI. Two groups of patients in the recovery period (> 1 year) of the stroke were investigated. Patients in the first group were after cerebral bypass surgery (10 persons), the second group included patients after conservative therapy (7 persons). MRI study was made at 1.5T system (PHILIPS). The paradigm for the functional MRI included small ball squeeze in response to a visual cue. We examined patients from group №1 before surgery, in the early postoperative and recovery periods. We tested the neurological status before and after surgery (in the recovery period). The neuronal activity from the stroke region (precentral gyrus), supplementary motor cortex and contralesional hemisphere were compared. A significant increasing neuronal activity was found in the stroke region after conservative treatment ($p < 0,05$). The comparing of patients with extracranial-intracranial bypass in dynamics before surgery, after revascularization and in the recovery period didn't show any significant increasing neuronal activity in the stroke region. In the surgical group a significant decreasing neuronal activity was observed in the contralesional hemisphere in the recovery period ($p < 0,05$). According to the data from neurological examination the motor function recovery of the damaged upper extremity took place in the 20% of patients after surgical revascularization. The investigation was made with financial supporting of FASO Russia in theme 0333-2014-0003 in the theoretical part and clinical analysis and the RSF grant (project №14-35-00020) in the MR-tomography.

Biography

Sofya Markdorf studies medicine in the National Research University Novosibirsk State University. She makes her scientific work in the laboratory MRT Technologies of the Institute International Tomography Center of the Russian Academy of Sciences.

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