

Motor Cortex in Hemiparetic Patients due to Deep Intracerebral Hematoma

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Purpose: To determine the motor cortex dysfunction in hemiparetic patients due to deep intracerebral hematoma, authors performed proton magnetic resonance spectroscopy (1H MRS) for the evaluation of biochemical changes in the cortex on affected hemisphere according to axonal injury at the level of internal capsule.

Methods: Ten control subjects and 14 patients with documentable hemiparesis of varying severity hemiparesis were included. All the hemiparesis was caused by deep intracerebral hematoma (putaminal and thalamic hemorrhage). In vivo 1H MRS study was performed on a 3T MRI/MRS system using STEAM sequence. As a single-voxel technique, Spectral parameters were: 20 ms TE, 2000 ms TR, 128 averages, 2500 Hz spectral width, and 2048 data points.

Results: We found that the mean N-acetylaspartate (NAA)/ phosphocreatine (Cr) and NAA/ choline (Cho) ratios were significantly decreased in the motor cortex of the hemiparesis patients compared with control subjects.

Conclusions: 1H MRS examinations of the motor cortex might help to differentiate distinct clinical entities of hemiparesis and to monitor pharmacological effects in therapeutic trials, providing a quantitative biological marker for motor neuron dysfunction.

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