

# **Hemisphärische Unterschiede in neuropsychologischen Faktoren und magnetquellen basierte Bildgebung bei Patienten mit Läsionen im Bereich des primären sensomotorischen Kortex**

**Hemispherical differences of neuropsychological factors and magnetic source imaging in patients with lesions around the primary sensorimotor cortex**

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## **Purpose**

Surgery related impairment of neuropsychological functions play an important role. Aim of the presented study was to analyse hemispherical differences in patients with lesions around the sulcus centralis by means of magnetic source imaging (MSI) and neuropsychological examination.

## **Methods**

Forty patients with lesions around the primary sensorimotor cortex underwent neuropsychological testing, including inter alia intellectual skills, cognitive and sensorimotor functions. All patients were studied by MSI for sensorimotor function. Neurosurgical interventions were carried out using MSI-based functional neuronavigation.

## **Results**

Twelve patients (mean age: 39 years; range: 24-62 years) could be studied pre- and postoperatively (6 gliomas, 1 meningioma, 1 melanoma, 1 lymphoma and 3 cavernomas).

In 7 cases the lesions were localised pre- and in five cases postcentral, 6 on each hemisphere. In 8 cases it was not possible to examine the patients postoperatively with magnetoencephalography (MEG) due to metal induced artefacts. Ten patients refused further testing and the other 10 patients were transferred from the neurosurgical unit before postoperative examination. There was no statistical relevant pre- and postoperative differences between the affected and the unaffected hemisphere neither in neuropsychological testing nor in MSI. Whereas in single cases an abnormal high evoked neuronal activity could be noted preoperative within the border area of the lesions. No relevant worsening of cognitive or sensorimotor function could be noted between the pre- and postoperative testing.

## Conclusion

Even though this is a small series of patients our data underline the importance of functional neuronavigation. The high evoked neuronal activity in the border area of the lesions can be interpreted as functional or even structural reorganisation process.