



Low grade gliomas in motor area and cortical displacement

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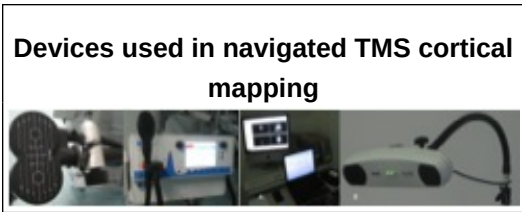


Introduction

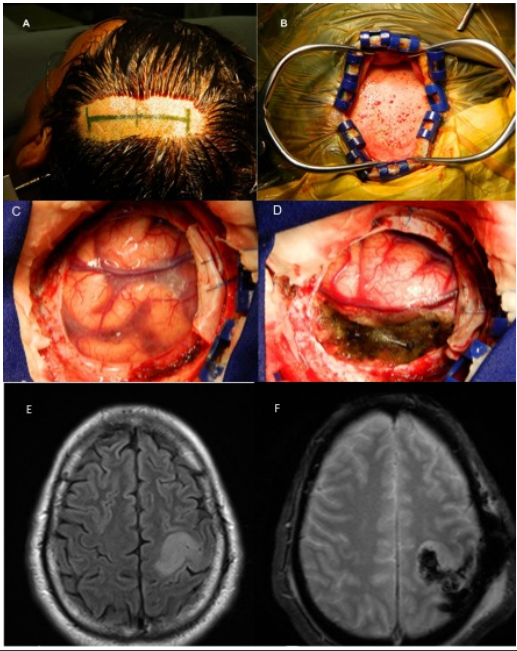
Using mapping of the motor cortex by transcranial magnetic stimulation navigated to assess cortical plasticity and displacement motor area in patients with low-grade gliomas .

Methods

In this prospective study, six patients with low-grade gliomas in or near the precentral gyrus underwent TMS mapping, and their motor responses were correlated to locations in the cortex around the lesion, generating a functional map overlaid on three-dimensional magnetic resonance imaging (MRI) scans of the brain. To determine anatomical changes, we compared TMS mapping in each hemisphere, comparing side with tumor versus contralateral normal side



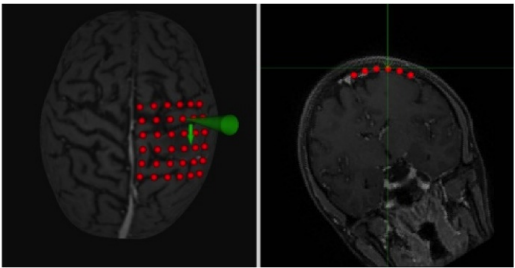
Patient 1: Low grade glioma in motor cortex



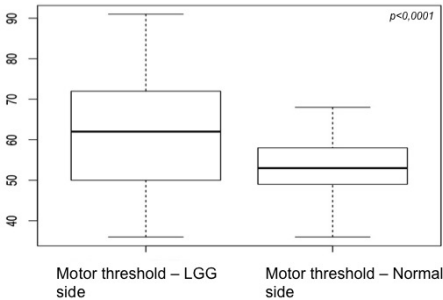
Results

Referring to the distortion of the anatomy of the motor area , we have identified differences comparing the normal side of the patients as control ($p = 0.001$). When we analyze a comparative areas of transcranial magnetic stimulation in the side with the tumor with the normal hemisphere, we identified a smaller mapped area in the cortex with anatomical deformity compared to the area of the normal cortex ($p = 0.01$)

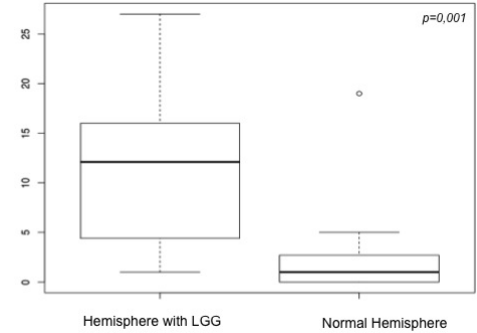
3D images in the Cortical mapping with navigated TMS



Motor Threshold with Transcranial magnetic stimulation



Motor Cortex distance to anatomical area of hand - LGG side versus Normal side



Conclusions

Low grade gliomas in motor area result in important cortical displacement

References

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3. Säisänen L, Pirinen E, Teitti S, et al. Factors influencing cortical silent period: optimized stimulus location, intensity and muscle contraction. J Neurosci Methods. 2008;169(1):231–238.
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Learning Objectives

1. studying the physiology of the motor cortex and aspects of cortical plasticity
2. To describe aspects of neuronal recruitment in low-grade gliomas surgery