

Section: Intraoperative Bildgebung

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Abstract-Title:

IMPACT OF INTRAOPERATIVE LOW FIELD MRI ON INTRACRANIAL TUMOR RESECTION - PRELIMINARY EXPERIENCE IN 80 CASES

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Abstract-Text:

Objective:

To analyze the role of intraoperative low-field MRI on intracranial lesions resection in a preliminary series of 80 consecutive cases.

Methods:

From June 2004 to June 2006, 80 consecutive patients underwent resection for supratentorial tumors in a 0.15T magnetic resonance system (Pole Star N20 – Odin Medical Technologies). Thirty tumors were high grade gliomas, 14 low grade gliomas, 21 pituitary adenomas, 7 metastasis, 4 intracranial abscess, 2 meningiomas, 1 cavernoma, 1 craniopharyngeoma. The tumor resection was carried out after standard craniotomy using intraoperative neuronavigation (Medtronic Stealth Station). The resection was stopped at the point when the operation was considered complete by surgical microscope view. Then, intraoperative MRI was performed in order to determine the occurrence of residual tumor and to increase the tumor resection.

Results:

A sufficient image quality was achieved in all contrast enhanced lesions. In 9 cases, among 30 high grade gliomas (30%), we could identify residual tumor and a complete resection was achieved. Regarding pituitary adenomas, we could increase the tumor resection after intraoperative MRI in 4 of 21 cases (19%). In all other contrast enhanced lesions, the intraoperative MRI had no additional benefit for resection rate. In low grade gliomas, resection control using T2 and Flair images did not show a clear tumor-brain tissue border. Among the 14 low grade gliomas, we performed additional resection in 5 cases (41.6%) after the intraoperative MRI control. No complications attributable to intraoperative MR imaging was observed.

Conclusion:

Intraoperative low field MRI increases the rate of complete tumor removal in enhancing tumors especially in high grade gliomas and in pituitary adenomas, without additional morbidity. For low grade gliomas, the actual image quality provided by low-field MRI is not sufficient to control the complete resection.