

Vergleich der postoperativen stationären Verweildauer bei Patienten mit intrakraniellen Gliomen nach Exstirpation im offenen 0,5-T-MRT und nach neuronavigationsgestützter Exstirpation.

Comparison of hospital stay of patients with intracranial gliomas undergoing image guided surgery in a vertically open configured 0.5 T-MR scanner and neuronavigation guided surgery.

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Objective

It has been shown by several studies, that the use of intraoperative image guidance provides neurosurgeons with useful and reliable information about the extent of resection and about the relationship of the intracerebral lesion to eloquent brain areas during surgery. Clinical impact of these operation procedures has also been proved. Data acquisition, preparation (planning, matching of different image modalities, fusion of data), and performing image guided operations are often more extensive and time consuming and therefore more expensive than conventional operations. The objective of this analysis was to evaluate, whether there is a difference of postoperative hospital stay in patients who underwent craniotomy and glioma resection under intraoperative MR image guidance in comparison to neuronavigation guided procedures.

Methods

The files of 137 patients from 1997 until 2002 suffering from supratentorial intracerebral gliomas were retrospectively reviewed. Age at time of operation, sex, Karnofsky Performance Score, ASA grade, location and histology of the neoplasm, extent of

resection, type of intraoperative resection guidance, morbidity rate, postoperative hospital stay, postoperative stay on the ICU, and type of dismissal were registered. Operations were performed using either a vertically open configured 0.5 T-MR scanner Signa SP/i. (General Electric Medical Systems, USA) with an integrated navigation system (Localite Brain Navigator™, Localite, Germany) or a frameless neuronavigation system (Zeiss, Germany). For analysis of postoperative hospital stay univariate, multivariate analysis, Kaplan Meier-curves, and the Cox regression model were used.

Results

Ninety-two patients underwent glioma resection in the interventional MRI, 45 patients were operated with navigational guidance. In the whole sample the mean postoperative hospital stay (surgery to dismissal) was 9.7 ± 3.6 days and the mean postoperative stay on the ICU 2.1 ± 1.7 days. In the MR open group (MRO) the mean postoperative hospital stay was 9.4 ± 3.2 days and in the neuronavigation group (NAV) 10.6 ± 4.3 days ($p = 0.493$), and the mean postoperative stay on the ICU in the MRO group was 2.2 ± 1.5 days and in the NAV group 2.0 ± 2.1 days ($p = 0.090$). If stratified into benign gliomas WHO grade I and II (BNG) and malignant gliomas WHO grade III and IV (MLG) the intervals were as follows. BNG: In the MRO group the mean postoperative hospital stay was 9.1 ± 2.7 days and in the NAV group 10.0 ± 4.7 days ($p = 0.737$), and the mean postoperative ICU stay in the MRO group was 2.0 ± 1.4 days and in the NAV group 1.5 ± 0.6 days ($p = 0.518$). MLG: In the MRO group the mean postoperative hospital stay was 9.5 ± 3.4 days and in the NAV group 10.7 ± 4.4 days ($p = 0.508$), and the mean postoperative ICU stay in the MRO group was 2.2 ± 1.6 days and in the NAV group 2.0 ± 2.2 days ($p = 0.116$).

Conclusion

In contrast to other published results (e.g. Hall, W. A. et al. 2003) our retrospective study did not show any influence of the type of intraoperative resection control on postoperative stay in patients undergoing resection of intracranial gliomas.