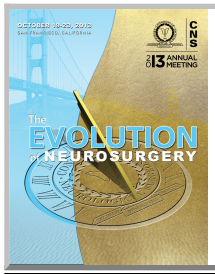

Impact of Intra-Operative MRI and Multimodal Neuronavigation on Health Related Quality of Life and Survival in Adults with High-Grade Gliomas: A Prospective Controlled Study

Xiaolei Chen MD, PhD; Gang Zheng; Sheng Hu; Jingjiang Li; Fangye Li; Jiashu Zhang; Bai-Nan Xu

Introduction

The value of intra-operative MRI for the treatment of high-grade gliomas(HGGs) still remains controversial. This study was conducted to evaluate the impact of 1.5T intra-operative MRI (iMRI) and multimodal neuronavigation on the health-related quality of life (HRQOL) and survival for the treatment of patients with HGGs.

Methods

From February 2009 to February 2012, a consecutive series of 512 adult patients with cerebral lesions suspicious of HGGs were prospectively enrolled. According to the post-operative histological diagnosis, 9 patients were excluded from this study. The patients were allocated into iMRI group (n=299) and control group (n=204). Patients in iMRI group underwent tumor resection with 1.5T iMRI and integrated multimodal navigation, while patients in control group had standard microsurgical resection and multimodal navigation. The extent of resection (EOR) and survival time were examined and compared. The 36-Item Health Survey (SF-36) were completed by patients and analyzed to assess HRQOL at study entry, 3-month, and 6-month follow-up.

Results

In study group, iMRI detected tumor remnants in 90 patients and resulted in final gross total resection (GTR) for 32 patients (GTR increased from 209 [69.9%] to 241 [80.6%] patients) in iMRI group. In control group, early post-operative MRI (within 48 hours) revealed residual tumor in 60 cases. Final GTR in control group was 70.6%. There was significant difference for both GTR and EoR between iMRI and control group (GTR, 80.6% vs 70.6%; EoR, 95.5% vs 82.3%) respectively. Median survival was 14 months in iMRI group and 8 months in control group (P< .0001). There was significant difference for 3-month and 6-month HRQOL between iMRI and control group (p<0.05). Patients who underwent a gross total resection or had a higher EoR were more likely to have improved HRQOL (p<0.003) at their 3-month or 6-month follow-up evaluation.

Conclusions

We demonstrated that iMRI and multimodal neuronavigation significantly contribute to GTR and higher EoR, and was associated with longer survival and improved HRQOL over time for patients with high-grade gliomas.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the impact of high-field intra-operative Magnetic Resonance Imaging on both survival and health related quality of life for high grade gliomas, 2) Identify possible protocols to improve the standard of care in case of high-grade gliomas.

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