

ABSTRACT

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Brain Cancer Progression: A Retrospective Multicenter Comparison of Awake Craniotomy Versus General Anesthesia in High-grade Glioma Resection.

Chowdhury T(1), Gray K, Sharma M, Mau C, McNutt S, Ryan C, Farou N, Bergquist P, Caldwell C, Uribe AA, Todeschini AB, Bergese SD, Bucher O, Musto G, Azazi EA, Zadeh G, Tsang DS, Mansouri SA, Kakumanu S, Venkatraghavan L.

Author information:

(1)Department of Anesthesia and Pain Medicine, Toronto Western Hospital Section Neurosurgery, Toronto Western Hospital, University Health Network, University of Toronto Radiation Medicine Program, Princess Margaret Cancer Centre, University Health Network, Toronto, ON, Canada Max Rady College of Medicine Department of Anesthesiology, Perioperative and Pain Medicine, University of Manitoba Department of Epidemiology and Cancer Registry, CancerCare Manitoba Department of Radiology, Radiation Oncologist, CancerCare, University of Manitoba, Winnipeg, MB, Canada Penn State College of Medicine, Penn State University Section Neurosurgery, Penn State Health, Penn State Health, Milton S. Hershey Medical Center, Hershey, PA Department of Anesthesiology, The Ohio State University Wexner Medical Center, Columbus, OH Outcomes and Clinical Research in Perioperative Medicine, School of Medicine, Stony Brook University, Health Sciences Center, Stony Brook, NY.

BACKGROUND: High-grade gliomas impose substantial morbidity and mortality due to rapid cancer progression and recurrence. Factors such as surgery, chemotherapy and radiotherapy remain the cornerstones for treatment of brain cancer and brain cancer research. The role of anesthetics on glioma progression is largely unknown.

METHODS: This multicenter retrospective cohort study compared patients who underwent high-grade glioma resection with minimal sedation (awake craniotomy) and those who underwent craniotomy with general anesthesia (GA). Various perioperative factors, intraoperative and postoperative complications, and adjuvant treatment regimens were recorded. The primary outcome was progression-free survival (PFS); secondary outcomes were overall survival (OS), postoperative pain score, and length of hospital stay.

RESULTS: A total of 891 patients were included; 79% received GA, and 21% underwent awake craniotomy. There was no difference in median PFS between awake craniotomy (0.54, 95% confidence interval [CI]: 0.45-0.65 y) and GA (0.53, 95% CI: 0.48-0.60 y) groups (hazard ratio 1.05; $P < 0.553$). Median OS was significantly longer in the awake craniotomy (1.70, 95% CI: 1.30-2.32 y) compared with that in the GA (1.25, 95% CI: 1.15-1.37 y) group (hazard ratio 0.76; $P < 0.009$) but this effect did not persist after controlling for other variables of interest. Median length of hospital stay was significantly shorter in the awake craniotomy group (2 [range: 0 to 76], interquartile range 3 d vs. 5 [0 to 98], interquartile range 5 for awake craniotomy and GA groups, respectively; $P < 0.001$). Pain scores were comparable between groups.

CONCLUSIONS: There was no difference in PFS and OS between patients who underwent surgical resection of high-grade glioma with minimal sedation (awake craniotomy) or GA. Further large prospective randomized controlled studies are needed to explore the role of anesthetics on glioma progression and patient survival.

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