



ARTICLE OF THE MONTH

Long-term Survival for Patients Undergoing Volatile versus IV Anesthesia for Cancer Surgery: A Retrospective Analysis

Wigmore T.J., Mohammed K., Jhansi S. (2016) Long-term survival for patients undergoing volatile versus IV anesthesia for cancer surgery: a retrospective analysis. *Anesthesiology*, 124, 69-79.

Welcome to the June 2017 installment of the SNACC Article of the Month. This month's selection investigates the impact that different anesthetic agents might have on outcomes after cancer resection. As specialists in neuroanesthesia adapt their choice of anesthetic agent to each particular surgery, it is valuable to understand some of their implications.

This month's article was selected by Dr. Shaun Gruenbaum. Dr. Gruenbaum is a physician-scientist in the Department of Anesthesiology at the Yale University School of Medicine, where he is the assistant director of neuroanesthesia research. He is currently completing a PhD in investigative medicine at Yale, in which he studies cerebral metabolism and mechanisms of neuroprotection in animal models of epilepsy. His clinical interests are in the anesthetic management of patients undergoing brain tumor resection. Dr. Gruenbaum has received several awards for medical student education and research, including a FAER Mentored Research Training Award. He currently serves on the Education Committee for SNACC, where he chairs the PBLD subcommittee.

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~ Adrian Pichurko, MD, Nina Schloerker, MD, and Oana Maties, MD

Commentary

Shaun E. Gruenbaum, MD

Historically, most of the neuroanesthesia literature to date has examined how the perioperative anesthetic management impacts short-term outcomes in neurosurgical patients. Although measuring short-term outcomes offers several economic and practical advantages over conducting long-term outcomes studies, some experts in the field have recently pointed out that short-term outcome variables are often poor predictors of the meaningful, long-term outcomes that matter most to patients. As such, studies that investigate the effects of anesthetic management on long-term, disease-specific outcome variables are urgently needed.

Perhaps no subject in neuroanesthesia has been debated more than the superiority of volatile inhalational agents versus TIVA for anesthetic maintenance in patients undergoing brain surgery. Several randomized controlled trials have failed to demonstrate that one anesthetic technique is superior with regards to short-term outcomes

such as hospital length of stay, recovery of anesthesia, and quality of the surgical field. However, little is known about how anesthetic management may impact long-term outcomes such as tumor recurrence, mortality, quality of life and neurological outcomes.

In this month's SNACC Article of the Month, featured in the January 2016 issue of *Anesthesiology*, Timothy J. Wigmore and colleagues conducted a large retrospective analysis that investigated the association of anesthetic technique on long-term (three year) survival in more than 7,000 patients who underwent elective resection of a malignant tumor. The authors found that volatile inhalational anesthesia was associated with an increased risk of death (> 50%, with an adjusted hazard ratio of 1.46) compared with TIVA. The authors suggest several biological mechanisms that might explain this association, which is supported by strong laboratory evidence.

Although this study did not specifically include patients with malignant brain tumors, the study suggests that the choice of anesthetic maintenance may affect tumor recurrence and overall survival in patients with cancer. The implications are especially relevant for patients with a malignant brain tumor, in whom tumor resection offers the best chance of survival, and in whom many tumors (such as glioblastoma) have a high rate of recurrence. It should be noted that patients in this study were not randomized to either group; rather, the anesthetic management was according to the anesthesiologists' preference. Therefore, it is impossible to infer causality on the basis of this study. To this end, a prospective randomized controlled trial is currently enrolling patients in China to investigate the long-term (three year) impact of anesthesia maintenance on patients undergoing resection of a malignant tumor. Importantly, however, neurosurgical patients are being excluded from the study. Studies that investigate the long-term effects of anesthetic maintenance on malignant brain tumor recurrence and survival are urgently needed.