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Clinical Effects and Adverse Events Associated With Desflurane Use in Adult Patients Undergoing Supratentorial Craniotomy: A Systematic Review

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Abstract

Desflurane is an inhalational anesthetic agent with an appealing recovery profile. The present systematic review investigates the clinical effects and adverse events associated with desflurane use during supratentorial craniotomy for brain tumor resection in adults in comparison with other inhalational and intravenous anesthetic agents. A literature search was conducted across the MEDLINE, Library of Congress and LISTA (EBSCO) databases from January 2001 to January 2021. Twelve studies published between 2003 and 2020 were included in this systematic review. Desflurane was compared with either isoflurane, sevoflurane, or propofol for anesthesia maintenance. Brain relaxation scores showed no statistically significant difference between desflurane and the other anesthetic agents. Recovery timepoints, such as time to recovery, time to eye opening, time to extubation, time to follow commands, and time to reach a modified Aldrete score ≥ 9 were significantly shorter with desflurane in the majority of studies. Systemic hemodynamic variables (mean arterial pressure and heart rate) and cerebral hemodynamics (intracranial pressure and cerebrospinal fluid pressure) were comparable between desflurane and other anesthetic agents in each study. The results of this systematic review demonstrate that desflurane is associated with few adverse events when used for anesthesia maintenance in adult patients undergoing supratentorial brain tumor surgery. Large, prospective, comprehensive studies, utilizing standardized parameter evaluation could provide higher levels of evidence to support these findings.

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