Desflurane

Desflurane is an inhalational anesthetic agent with an appealing recovery profile.

A 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 time points, 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 [1].

A cerebral vasodilator, increases CBF and ICP. Decreases CMRO2 which tends to cause a compensatory vasoconstriction.

Available in Russia since August, 2013. Des is a halogenated ether; its chemical structure is 2-difluoromethoxy-1-1-1-2-tetrafluoroethane (C3H2F6O). Special thermocompensated evaporators are used for Des dosing. Low solubility in blood and tissues of an organism causes fast absorption and elimination of Des. Blood/gas distribution ratio of Des is 0.42. Des distinctive properties are high saturated vapor pressure, super short duration of action and average power. Furthermore it is characterized by the minimal metabolism and lack of interaction with soda lime. Des is used for general anesthesia in a cardiac surgery neurosurgery, out-patient surgery, pediatric practice and other areas of surgery. Des has more positive qualities and fewer limitations, than other inhalation anaesthetics (halothane, isoflurane, sevoflurane). High cost of the anaesthetic is compensated by quality and controllability of anaesthesia and reduction of stay time in recovery unit. Fast elimination of the anaesthetic from a body allows reducing a frequency of complications connected with violation of upper airway and hypoxemia, promotes early discontinuation of artificial ventilation, reducing somnolence, earlier restoring a muscular tone in the postoperative period [2]

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Gkantinas G, Tataki EI, Lykoudis PM, Lelekaki E, Kouki P. Clinical Effects and Adverse Events Associated With Desflurane Use in Adult Patients Undergoing Supratentorial Craniotomy: A Systematic Review. J Neurosurg Anesthesiol. 2023 Jan 30. doi: 10.1097/ANA.0000000000000905. Epub ahead of print. PMID: 36706431.
2)
Moshchev DA, Lubnin AIu. [Application of desflurane in anaesthesiology]. Anesteziol Reanimatol. 2014 Jan-Feb;(1):71-8. Review. Russian. PubMed PMID: 24749317.