

Does general anesthesia increase the risk of dementia?

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Predisposing factors to identify preventive strategies for Alzheimer's disease (AD) has become increasingly important last years. Surgery and anesthesia have been proposed to increase the incidence of post-operative cognitive decline (POCD) and AD. Mechanisms: Animal studies indicate that volatile anesthetics may augment the pathological processes of AD by affecting amyloid β processing. Neuro-inflammation plays a pivotal role in POCD. Prevention: BIS-guided anesthesia reduced anesthetic exposure and decreased the risk of POCD. Hypertonic saline can improve post-operative delirium (POD). The PPAR γ agonist pioglitazone attenuated the surgery-induced inflammatory changes and rescued the associated POCD. Berberine rescued POCD in twenty-month-old male C57BL/6 mice. Administration of a NADPH oxidase inhibitor apocynin (APO) could rescue POCD. Depth of anesthesia: Small clinical trials have demonstrated increased POD and POCD in patients who were relatively deeply anesthetized. Kind of anesthesia: Available randomized controlled trials suggest that there is no significant difference in the incidence of POD or POCD when general anesthesia and regional anesthesia are compared. Type of surgery: POCD is associated with non-cardiac surgery and even sedation for non-invasive procedures such as coronary angiography. Recently the focus of POCD has shifted from the type of surgery or anesthetics to patient susceptibility. Besides old age, mild cognitive impairment has been shown to increase the risk of developing POCD and AD. The use of CSF or PET to diagnose AD many years before symptoms appear, may identify susceptible individuals. Recent meta-analysis, however, suggests: Further well-designed studies are warranted to better characterize the relationship of interest.