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Anesthesia in infancy may be linked to memory

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Recollection of details or events may be impaired in children who received general anesthesia as infants, according to a small initial study published in *Neuropsychopharmacology*.

Animal studies have found that anesthesia causes nerve cell death and impairments in the hippocampus, frontal cortex, and other areas of the brain that are known to support recollection, defined as the retrieval of specific details from a past event. In humans, the potential of anesthesia to produce long-term changes in memory is uncertain.

Greg Stratmann and colleagues compared recollection aptitude of two groups of 28 children each, ages six to 11 years old, over a ten-month period. One group had undergone a procedure requiring general anesthesia before age one, and the other had not. The children did not differ in tests measuring intelligence or behavior, but those who had received anesthesia had significantly lower recollection

scores when tested on their ability to recognize items they were previously shown. In a parallel study, 33 rats subjected to general anesthesia during their first week of life also showed long-term deficits in recollection for odors nine to 10 months later, when compared to rats that did not receive anesthesia. In rats that had undergone tissue injury similar to that produced by surgical procedures, recollection scores were comparable to rats anesthetized without tissue injury. The results suggest that the effects on recollection in rats are due specifically to anesthesia, rather than tissue injury.

The authors note that while the findings in rodents suggest that anesthesia may have long-term effects on memory, they cannot rule out that underlying conditions or surgical procedures contribute to the deficit in humans. Further studies are required to confirm the association and determine if other factors are involved and how long-lasting these impacts are.

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