IARS
International Anesthesia Research Society

Society for Pediatric Anesthesia
education • research • patient safety

FOR IMMEDIATE RELEASE

Contact:
Tom Cooper, 415-730-2149, tcooper@iars.org

Mayo Clinic Study Adds Valuable Knowledge to Body of Research on Pediatric Anesthesia

Study of children undergoing anesthesia before age 3 supports earlier findings of no significant negative impact on intelligence, but multiple exposures may be associated with behavioral or learning problems; more research needed.

San Francisco – April 18, 2018 - A Mayo Clinic study of children who received one or more exposures to anesthesia before the age of 3 has provided valuable information about the potential neurological and behavioral impact of general anesthesia on very young children, according to the International Anesthesia Research Society and the Society for Pediatric Anesthesia.

The study goes further than earlier research in finding that very young children who have had even multiple exposures – rather than just a single exposure – to anesthesia exhibited no significant decline in IQ as measured later in life. However, those children who had two or more exposures do show a modest decline in fine motor skills and the ability to rapidly process information when reading. Their parents also reported more learning and behavioral problems than children who did not receive an anesthetic. Children who had had only one exposure showed some problems with skills that help with memory, impulse control, planning and flexibility, according to their parents' assessment, but not with other behaviors.

The Mayo study team conducted comprehensive neuropsychological assessments of children several years after their exposure to anesthesia before 3 years of age. The Mayo Clinic researchers enrolled nearly one thousand children born between 1994 and 2007 in Olmsted County, Minnesota, home of the clinic's Rochester campus, and determined which children had had one or more exposures to anesthesia and compared them to children who had not had an anesthetic. Each of the 997 children underwent four hours of IQ and brain function tests at ages 8-12 or 15-20. In addition, their parents answered detailed questionnaires about their child's behavior.

"The comprehensive design of this study is gratifying as we continue to dig deep to determine the impact that anesthesia may have on very young children," said Santhanam Suresh, MD, chair of the International Anesthesia Research Society's SmartTots Task Force. "Most other studies have been either in animals or are limited to a single exposure in humans. This MASK study is noteworthy because of its large size, extensive brain function testing and the ability to look at children who had more than one exposure to anesthesia."

The PANDA study, led by researchers at Columbia University and New York Presbyterian/Morgan Stanley Children's Hospital, compared children who had had a single exposure to anesthesia before age 3 with their siblings who had not; it found no significant difference in IQ when these children were tested between the ages of 8 and 15. The GAS study, led by an international team of researchers, has so far shown no difference in neurodevelopmental outcome at age 2 between infants who had received general anesthesia and those who received regional anesthesia. These patients will be tested again at age 5.

"What we are still not certain about is whether anesthesia itself is causing whatever negative impact we see, or if there is something else at play," said Olutoyin Olutoye, MD, chair of the Society for Pediatric Anesthesia's Research Committee. "While the findings of the MASK study are reassuring for parents of children receiving single anesthetics at a young age, this study raises new questions about the impact of repeated exposures on specific areas of brain function. We hope that some of these questions might be answered by the Mayo research team in future studies it has planned using specialized brain imaging techniques."

The study was published on April 18, in the Journal, *Anesthesiology.*
http://anesthesiology.pubs.asahq.org/article.aspx?articleid=2679328

# # #

About the International Anesthesia Research Society

The International Anesthesia Research Society is a nonpolitical, not-for-profit medical society founded in 1922 to advance and support scientific research and education related to anesthesia, and to improve patient care through basic research. The IARS sponsors the SmartTots initiative in partnership with the FDA. Information at www.iars.org, www.smarttots.org.

About the Society for Pediatric Anesthesia

The purpose of the Society for Pediatric Anesthesia, a non-profit medical society, is to continually advance the safety and quality of anesthetic care, perioperative management, and alleviation of pain in children. The Society serves 3,250 members through continuing medical education activities, research opportunities and networking. For more information call 804-282-9780 or visit www.pedsanesthesia.org.