F151. Exposure to Surgery and Anesthesia in Early Childhood and Subsequent Use of Stimulant Medication

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Description

Introduction: Recent clinical studies have found that anesthetic exposure in early childhood is not associated with lower scores in general intelligence and academic achievement. Some studies however have reported worse scores in behavioral function and an increased risk of attention deficit/hyperactivity disorder (ADHD).(1-3) This study evaluates the association between exposure to surgery and anesthesia, and the subsequent use of stimulant medications used to treat ADHD. Significant discrepancies between ADHD diagnoses and stimulant medication use have been reported.(4) The use of stimulant medication however is an important outcome because it is patient centered, requiring recognition of a need for pharmacological treatment and for parents to fill the prescriptions for their child, and may also be a marker of more severe disease.

Learner Objectives

Methods: A longitudinal dataset was constructed by linking individual-level Medicaid claims from Texas and New York from 1999 to 2010. This data was used to evaluate the association between a single exposure to anesthesia before age five years for one of four commonly performed pediatric surgical procedures (pyloromyotomy, inguinal hernia repair, circumcisions outside the perinatal period, and tonsillectomy and/or adenoidectomy[T&A]) and subsequent persistent use of stimulant medications (defined as at least two filled ≥30-day prescriptions). Exposure was identified by the presence of an ICD-9 or Current Procedural Terminology 4th edition (CPT-4) code for the surgical procedure. Stimulant medication use was identified by the presence of filled pharmacy claims, which have been found to be highly accurate in reflecting medication use, particularly for chronic medications.(5) Exposure to anesthesia and surgery was evaluated in five age at exposure categories: infancy, >1 year and ≤2 years, >2 year and ≤3 years, >3 year and ≤4 years, and >4 year and ≤5 years old. Each exposed child was propensity score matched to five children without anesthetic exposure before age five years based on sociodemographic and clinical covariates. Cox proportional hazards models were used to evaluate the relative risk of stimulant use following exposure to anesthesia and surgery.

Key Takeaways

Results: A total of 42,687 children with a single exposure to anesthesia and surgery and 213,435 propensity score matched children unexposed before age five were included in the analysis. Children with a single exposure were 29% more likely than unexposed children to have persistent stimulant use [adjusted hazard ratio (aHR) 1.29; 95% CI, 1.24–1.35]. (Figure 1, Panel A) When evaluating individual procedures, a higher risk of stimulant use was seen in children who had T&A surgery. (Figure 1, Panels B-E) When excluding all T&A patients, the aHR for children with exposure for pyloromyotomy, inguinal hernia repair, or circumcision was 1.15 (95% CI, 1.08–1.23). No differences in the risk of stimulant use was seen based on the age of exposure to anesthesia.

Submissions

2010 - Exposure to Surgery and Anesthesia in Early Childhood and Subsequent Use of Stimulant Medication (index.cfm?do=abs.viewAbs&abs=2683)

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IARS Abstract Category

Pediatric Anesthesiology