Single-Dose Etomidate and Pediatric Cortisol Levels

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In a randomized, double-blind study, a single induction dose of etomidate suppressed postoperative cortisol levels in children, but this has no effect on clinical outcomes.

Etomidate transiently suppresses 11ß-hydroxylase, a key glucocorticoid synthetic enzyme, resulting in temporary reductions in circulating cortisol. A recent meta-analysis found no association between single-dose etomidate and adverse clinical outcomes in adults. The effect of general anesthetics on adrenal synthetic function in children is not well understood.

Researchers at an academic medical center in China randomized 77 healthy children (ages 3–12 years) undergoing urologic surgery to induction of anesthesia with etomidate (0.3 mg/kg IV) or propofol (2 mg/kg IV). To minimize confounding by diurnal variation in cortisol levels, all surgeries started at 11 a.m. Anesthesia was maintained with sevoflurane, remifentanil, and rocuronium. Salivary cortisol levels were measured preoperatively and several more times over the following 48 hours. As a control, salivary cortisol levels were also measured in 10 healthy volunteers and in 15 of the surgical candidates on the day before surgery.

The etomidate group had significantly suppressed salivary cortisol for 24 hours after surgery, compared with the propofol and control groups. However, there were no differences between the etomidate and propofol groups in any secondary clinical outcomes, which included fistula formation, postoperative hypotension, vasopressor use, need for antibiotics, and hospital length of stay.

Comment: This is the story that just won’t go away. We know etomidate suppresses cortisol circulation; however, the available evidence has failed to show any association with adverse patient outcomes. Etomidate should remain the induction agent of choice for emergency airway management in adult and pediatric patients. Period.

Citation(s):

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