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The Risk-Benefit Profile of Etomidate for Pediatric Rapid Sequence Intubation

Guldner G, Schultz J, Sexton P,
Fortner C, Richmond M

Objectives: Etomidate has become a preferred medication for adult rapid sequence intubation (RSI) due to its minimal effect on blood pressure. The manufacturer does not yet recommend its use in children under 10 due to a lack of data. Potential risks of etomidate include an association with myoclonus, seizures, emesis, and adrenal insufficiency. This study further elucidates the risk-benefit profile of etomidate for RSI in young children.

Methods: Trained abstractors reviewed the medical records for all children under 10 who received etomidate for RSI between July 1996 and October 1999. The study took place at a level one pediatric trauma center.

Results: 105 children, with an average age of 3, received a median dose of 0.32 mg/kg of etomidate. Indications for RSI included: trauma (64), pulmonary disease (23), ALOC (15), and "other" (11). The average blood pressure and pulse increased 4 mmHg (systolic), 7 mmHg (diastolic), and 10 bpm within 10 minutes of receiving etomidate. Complications included 3 patients who vomited within 10 minutes of etomidate administration (95% C.I. = 0.6% to 8.1%) –1 prior to, and 2 after intubation. There were no cases of myoclonus or status epilepticus. 43 patients received steroids during the hospital course, none for suspected adrenal insufficiency. Three patients died, all from severe brain injury. 1 in 5 patients had multiple attempts at intubation, but there were no failures.

Conclusions: In children less than 10, etomidate maintains the appeal of hemodynamic stability, and appears to have a low risk of adrenal insufficiency, myoclonus, and status epilepticus. The association between etomidate and emesis remains unclear. Thus, for clinical situations in which minimal blood pressure changes during RSI are critical, etomidate appears to have a favorable risk-benefit profile for these patients.

The Clinical Utility of Digital Rectal Examination in Adult Trauma Patients

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Objectives: The American College of Surgeons has advocated digital rectal examination (DRE) in the evaluation of all adult trauma patients. Its clinical utility however is unclear. This study sought to determine if physical exam findings could allow omission of the DRE in an identifiable subset of adult trauma patients.

Methods: Trained abstractors reviewed the ED records of all adult trauma activations at a level I trauma center during 2000. Variables included the result of the rectal exam, physical examination, and discharge diagnoses.

Results: There were 733 adult trauma activations in 2000. 51 were excluded (6 records could not be located, 44 were intubated prior to arrival in the ED, 1 had pre-existing T12 paraplegia, 1 had spilled blood contaminating the rectum). 10 patients had DRE "deferred", 2 patients refused DRE, 6 patients died prior to a DRE, and 56 had no documentation of a DRE. There were 41 abnormal DREs (6.7%) in the remaining 607 patients. Abnormal findings included: 39 with decreased or absent tone, 1 with perianal lacerations, and 1 with a high-riding prostate. 7 of the 41 patients with abnormal DRE had no significant injury on discharge (false positives). 16 had spinal abnormalities, 16 had severe head injury, 1 had a urethral disruption, and 1 had peri-rectal lacerations (true positives). All patients with a true positive DRE had at least one of the following: abnormal neurological exam as evidenced by either extremity weakness or chemical paralysis for intubation (19), GCS < 15 (11), or extremity paresthesias (1), blood at the urethral meatus (1), complaints of rectal pain (1), or age over 75 (1).

Conclusions: Few trauma patients have abnormal DREs. Of those that do, all true positive abnormal DREs in this sample could be predicted by: an abnormal neurological exam, urethral blood, rectal pain, or age over 75. These results must be verified by a validation set.