Comparison between Sevoflurane and Desflurane on Emergence and Recovery Characteristics of Children undergoing Surgery for Spinal Dysraphism

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BACKGROUND
- Rapid recovery is desirable after neurosurgery as it enables early postoperative neurological evaluation and prompt management of complications.
- Sevoflurane is generally considered as a suitable inhalational agent in neuroanesthesia practice.
- Desflurane is expected to provide earlier emergence from anesthesia, and may be a preferred agent in neurosurgical patients.
- Previous studies comparing the emergence from sevoflurane and desflurane in children are scarce and results are far from uniform.

OBJECTIVE:
- To compare the the effect of sevoflurane and desflurane anesthesia on emergence and extubation in children undergoing spinal surgery.

METHODS
- Prospective, randomized controlled study.
- Exclusion Criteria:
  - 60 consecutive children.
  - Aged 1-12y, ASA Grade I/II.
  - Undergoing elective surgery for spinal dysraphism.
- Inclusion Criteria:
  - Children who underwent prior spinal surgery.
  - Children with cardiac, renal, hepatic and respiratory dysfunction.
  - Children with associated hydrocephalus, Arnold-Chiari malformation and history of seizures.

RESULTS

Anesthetic Management
- Premedication: no sedative premedication
- Routine monitors connected
- Induction: Sevoflurane 8% in O2 @ 6 L/min
- IV access secured -- Fentanyl 2 µg/kg
- Tracheal intubation: Rocuronium 1 mg/kg
- Maintenance: Randomized to receive:
  - Sevoflurane + O2 + N2O (40:60) + FGF @ 2 L/min
  - Desflurane + O2 + N2O (40:60) + FGF @ 2 L/min
- Along with fentanyl (1 µg/kg/h) and rocuronium.
- Monitoring: ECG, SPO2, ETCO2, NIBP, BIS (45 – 55)

Exclusion Criteria
- Children with associated hydrocephalus, Arnold-Chiari malformation and history of seizures.
- Exclusion from other groups based on individual patient conditions.

Hemodynamics
- Statistical analysis

DISCUSSION
- Hemodynamics was comparable at all stages of surgery except the MBP was higher with desflurane during laminectomy (T4) and dural incision (T7).
- Possibly due to intense surgical stimulus.
- May be due to rapid rise in concentration of desflurane to maintain prefixed BIS values, resulting in sympathetic stimulation during painful stages of surgery.
- The extubation and emergence times were significantly less with desflurane.
- Mean emergence and tracheal extubation times were shorter as compared to other studies.
- May be due to reduced anesthetic depth during skin closure, in this study.

CONCLUSION
- Desflurane provided early emergence and tracheal extubation, in comparison to sevoflurane in children undergoing corrective surgery for spinal dysraphism.

REFERENCES