

TITLE: CEREBRAL BLOOD FLOW IN CHILDREN WHEN SEVOFLURANE IS SWITCHED TO DESFLURANE

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INTRODUCTION: The effect on cerebral blood flow velocity (CBFV) when sevoflurane (Sev) is changed to desflurane (Des) anesthesia has been reported. (1) This study was designed to determine if mild hypocapnia can prevent this change in CBFV in children.

METHODS: With REB approval 10 healthy children scheduled for urological surgery were enrolled. Each patient randomly received Sev 1 MAC at either 30 or 40 mmHg end-tidal CO₂ (ETCO₂) followed by Des 1 MAC at the same ETCO₂. The same sequence was repeated at the other ETCO₂. CBFV was measured at steady-state for each agent and ETCO₂. Heart rate, mean arterial blood pressure and temperature were recorded.

RESULTS: The age and weight were 36.6±23.8 mo and 14.3±5.2 kg, respectively. CBFV was higher at ETCO₂ 40 when compared to ETCO₂ 30 regardless of the anesthetic agent. (*P*<0.001, Table) The blood pressure decreased when sevoflurane was switched to desflurane at 30 mmHg ETCO₂ and HR remained unchanged. (*P*<0.01, Table)

ETCO ₂	30	30	40	40
Agent	Sev	Des	Sev	Des
CBFV (cm/sec)	34.0 (4.6)	43.2 (6.5)	62.5 (8.7)	65.5 (10.4)
BP (mmHg)	60.6 (13.9)	58.4 (8.8)	58.4 (8.7)	54.9 (5.9)
HR	102.2 (14.8)	104.9 (15.5)	104.0 (6.4)	107.9 (12.2)

Values are mean (SD)

DISCUSSION: Replacing sevoflurane with desflurane anesthesia in children might lead to an increase in CBFV if proper control of ETCO₂ is not ensured. This might have important considerations in patients with decreased intracerebral compliance.

REFERENCES:

1) *Anesth Analg.* 91:525.