A comparative study of effect of sevoflurane on intubating conditions with rocuronium in neurosurgical patients

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Background: Rocuronium may not be preferable for rapid sequence intubation due to its long intubation time compared to Succinylcholine. But, Rocuronium along with 2% Sevoflurane may produce comparable intubating time and conditions to that of Succinylcholine. This prospective, randomised, double-blind study was undertaken to compare the effect of Sevoflurane on intubation time and conditions with Rocuronium. **Materials and Methods:** 30 adult patients of ASA grade I and II of both sexes aged between 30 to 65 years undergoing neurosurgical operations were randomly allocated into 2 equal groups: one group received 0.8 mg/kg of Rocuronium and 2% Sevoflurane (Group – RS) and other received 0.8 mg/kg Rocuronium (Group – R). Onset time of intubation was assessed using Train of Four stimuli. The intubating conditions were compared by the Cooper scoring system and haemodynamic responses were compared between two groups. **Results:** The onset time of intubation was 60.4 ± 4.1 s in Group-RS and 101.73 ± 10.28 s in Group-R ($P < 0.001$), with excellent intubating conditions in both the groups and without any adverse effects. Significant differences in heart rate and mean arterial pressure were seen immediately after intubation, at 1 min, and at 3 mins ($P < 0.05$) between the two groups. **Conclusion:** Rocuronium with 2% Sevoflurane provides excellent intubating time and conditions comparable to Succinylcholine.

Correlation of invasive intracranial pressure with optic nerve sheath diameter measured by ultrasonography and magnetic resonance imaging

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Background: Bedside ultrasonographic measurement of optic nerve sheath diameter (ONSD) has been proposed as a method to detect raised intracranial pressure (ICP) in various clinical settings. We aimed to evaluate the use of ultrasonography in the case of intracranial hypertension and to find out the cut-off point which predicts ICP accurately at different levels. We also aim to correlate the ONSD obtained from MRI and sonographic ONSD with each other and the intraventricular ICP. **Materials and Methods:** A prospective double blind study was carried out by performing 360 ocular ultrasounds in 30 adult patients with features of intracranial hypertension. The ONSD was measured by MRI and USG preoperatively and by USG under anaesthesia. It was compared with the intraventricular ICP and correlations were derived. The optimum cut-off of ONSD to predict ICP ≥ 20 mm Hg was sought. **Results:** There was a significant correlation of ONSD from MRI with the sonographic ONSD (r = 0.909, $P = 0.000$), the ONSD by MRI with ICP (r = 0.564, $P = 0.001$), the preanaesthesia ONSD with ONSD under anaesthesia (r = 0.942, $P = 0.000$) and the sonographic ONSD with ICP (r = 0.0.532, $P = 0.002$). An ONSD threshold of 5.5 mm predicted ICP ≥ 20 mm Hg with high sensitivity (100%) and specificity (75%) (area under ROC curve = 0.904, $P = 0.01$). **Conclusion:** Our study confirms the utility of optic nerve ultrasound in the diagnostic evaluation of patients with known or suspected intracranial hypertension. We recommend an ONSD cut-off of 5.5 mm for predicting ICP ≥ 20 mm Hg.

Retrospective analysis of anaesthesia for posterior fossa surgery in the sitting position: A three year review of our institutional practice

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Background: Sitting position for neurosurgery offers many advantages which include optimum access to midline lesions, gravitational drainage of blood and cerebrospinal fluid. It is a physiological position that allows access to airway and improved ventilation. Its disadvantages are a high incidence of venous air embolism and cardiovascular instability. We present a retrospective analysis of anaesthesia for posterior fossa surgery performed in the sitting position from January 2011- December 2013. We have assessed patient safety and reviewed perioperative complications. **Materials and Methods:** 224 patients were reviewed over a 3 year period. Preoperative assessment included a 2DECHO to rule out patent foramen ovale. Anaesthesia was induced with propofol, sevoflurane, narcotic, muscle relaxant and

IPPV with 50% Air: Oxygen. Continous radial arterial pressure, CVP and $EtCO_2$ was monitored throughout surgery. During facial and auditory nerve testing, muscle relaxant was discontinued and TOF monitoring was used. Any intraoperative (VAE, haemodynamic instability) and postoperative (pneumoencephalus, macroglossia, neurodeficits) complications were noted. **Results:** In our study, 50% of patients had a drop in BP 10-20 mmHg during positioning and 15% had bradycardia during surgical retraction. Incidence of VAE was 7% and associated hypotension was seen in 2 patients. All patients developed postoperative pneumoencephalus but only 1 patient presented with temporary blindness. 1 patient had macroglossia and had to be reintubated. There was 1 case of temporary quadriplegia and 1 foot drop. There was no mortality. **Conclusion:** Despite potential complications, with appropriate patient selection and intraoperative monitoring patients will benefit from using sitting position for posterior fossa surgery.

The incidence of coagulopathy and its effect on outcome in patients with traumatic brain injury (TBI)

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Background: Coagulopathy following isolated traumatic brain injury (iTBI) is well known and studies have found an association between coagulopathy and unfavourable outcome. We conducted this study to determine the incidence and the effect of coagulopathy (both early and late) on postoperative outcome. **Materials and Methods:** In this prospective observational study the following data were collected: age, sex, mode of injury, CT diagnosis, post-resuscitation Glasgow Coma Scale (GCS), preoperative and post operative platelet count, liver function tests, intraoperative blood loss and transfusion, fluids infused, and repeat surgery for haematomas. Coagulocheck XS was used to obtain prothrombin time (PT) and International Normalized Ratio (INR) within 1st 24 hours and repeated at 48–72 hours. Coagulopathy was defined as INR ≥ 1.3 and thrombocytopenia as platelet count ≤ 1 lakh. Outcome measures used were length of hospital stay, GCS at discharge and mortality. **Results:** In the study population of 166 patients, mean age was 36 ± 13 years and average preoperative GCS was 8.8 ± 3.6. The incidence of coagulopathy increased from 42.8% to 55.6% and thrombocytopenia from 3.5% to 14.7% at 72 hours. Patients with coagulopathy had lower preoperative GCS (8.6 ± 3.4 vs 9 ± 3.6, $P = 0.02$), had greater intraoperative blood loss and received more crystalloids and colloids. However, there was no difference in the incidence of postoperative haematomas, length of stay, GCS at discharge or mortality. **Conclusion:** The incidence of early coagulopathy is high, increases at the end of 48–72 hours and is associated with increased intraoperative blood loss and fluid requirements. However, we could not demonstrate increased mortality or poor outcome in patients with deranged coagulation.

Effect of dexmedetomidine for ICU sedation in head injury patients

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Introduction: Although neuro-intensive patients share many goals with general ICU patients, some indications are unique to the NICU population, such as maintaining adequate cerebral perfusion pressure (CPP), while controlling intracranial pressure (ICP) and mean arterial pressure (MAP). **Materials and Methods:** We compared the effect of 0.2–0.7 µg/kg/hr dexmedetomidine infusion to a standard sedative infusion of fentanyl 0.2–1 µg/kg/hr and midazolam 0.02–0.07 mg/kg/hr in 11 consecutive patients of Traumatic Brain Injury (TBI) admitted to the neurosurgical intensive care unit (NICU) in crossover alternation for the first 48 hours after admission, titrating sedation to the Richmond Agitation-Sedation Scale (RASS). **Results:** Patient demographics were well matched between the two groups. Hemodynamics (HR, MAP) and intracranial pressure (ICP) along with cerebral perfusion pressure (CPP) were well maintained within (P = 0.472, 0.219, 0.328, and 0.165) and between both the groups (P = 0.096, 0.432, 0.478, 0.175 respectively) and the differences were not statistically significant [Figures 2-4]. Patients in Group D had similar RASS scores to those of Group C (P = 0.894) [Figure 5]. GCS was positively correlated with RASS in Group D (P = 0.467, P = 0.021) and Group C (P = 0.654, P = 0.001). Amount and number of rescue boluses of sedation with midazolam were similar in both the groups (n = 3, P = 0.463), nor any adverse effects seen in either group. **Conclusion:** Dexmedetomidine is a safe alternative to conventional fentanyl and midazolam sedative infusion for TBI patients admitted to Neurosurgical Intensive Care Unit, maintaining both cardiovascular (HR, MAP) as well as cerebral (ICP, CPP) dynamics, paving the way for future exploration of dexmedetomidine for sedation for neurosurgical ICU patients.

Attenuation of extubation responses: Comparison of prior treatment with verapamil and dexmedetomidine

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