- The deranged CA correlates strongly with the incidence of the vasospasm in the postoperative period with $P < 0.0001$.
- Altered CA in patients with aSAH had unfavourable outcome at discharge measured using mRS with $P = 0.02$.
- Further follow-up at 1 and 3 months using GOSE had shown poor neurological outcome in patients with deranged CA as compared with intact CA. $P \leq 0.001$.

Conclusions:
- Incidence of deranged CA in patients with aSAH varies from 69% to 74%.
- Patients with altered CA are more prone to develop vasospasm and have poor neurological outcome at discharge (mRS ≥ 3) and at 1 and 3 months after discharge (GOSE <7) compared with the patients with intact CA.

Reference:
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[SNACC-40] Perioperative Management of Pediatric Patients Undergoing Surgery for Intracranial Tumours: A Retrospective Analysis

Mishra N*, Rath G†, Chaturvedi A†, Bithal P‡. *AIIMS, Bhubaneswar, Odisha, India; †AIIMS, New Delhi, India; ‡King Fahad Medical City, Riyadh, Saudi Arabia.

Background: A large volume of literature is available with regard to perioperative complications in adults undergoing intracranial tumor surgery. However, such data in relation to children is scarce, and hence, most of intracranial tumour management issues are extrapolated from the adult data. This study was carried out to analyze the perioperative complications in children undergoing intracranial tumor surgery and their effect on outcome in terms of ICU and hospital stay, and modified Glasgow Outcome Scale (GOS) score.

Methods: Approval from Institutional Ethics Committee was obtained for this study. The preoperative, intraoperative and postoperative data of children with age younger than 16 years who underwent craniotomy for intracranial tumors over a period of 3 years were collected retrospectively using medical records and anesthesia notes.

Results: During a 3-year period, a total of 179 children were operated, of which 168 were included under this study. Tumor was located in the supratentorial compartment in 90 children versus 78 in the infratentorial region. The most common induction agent for anesthesia was propofol (131 children), followed by sevoflurane (22), and thiopentone (14). Most of the children were operated in horizontal position (90%) and rest (16) were operated in sitting position. The most common perioperative complications were brain stem handling and sodium imbalances, respectively. Postoperatively, 58% children required mechanical ventilation. Outcome variables like hospital stay, ICU stay, modified GOS were comparable in supra and infratentorial tumor surgeries. On multivariate analysis, reexploration surgery and sodium disturbances were observed to be the independent risk factors effecting hospital stay of these children. Intraoperative massive blood loss and postoperative pulmonary complications (POPCs) were found to be the independent risk factors affecting the neurologic outcome in terms of modified GOS. The incidence of mortality in our study was 3%.

Conclusions: Perioperative complications are common in children undergoing neurosurgery for tumor excision. Intraoperative blood loss and POPCs were major factors effecting neurological outcomes which further depend on preoperative and intraoperative factors. Knowledge of such perioperative challenges and specialized training in pediatric neuroanesthesia would help in better management of such patients.

Reference:
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[SNACC-41] The Blink Reflex as a Useful Approach for Assessing the Effect of Propofol During the Induction Phase of Anesthesia

Ferreira A*, Nunes C†, Felgueiras J*, Cardoso M*, Mendes J‡, Amorim P*. *Centro Hospitalar do Porto, Porto, Portugal; †Universidade Aberta, Porto, Portugal; ‡Universidade do Porto, Porto, Portugal.

Hypnotics attenuate or abolish almost all brainstem reflexes. Anesthesiologists should perform a neurological examination to assess the adequacy of unconsciousness, namely by assessing those reflexes.[1] General anesthesia results in the loss of corneal reflex, which may be used as evidence of loss of consciousness (LOC). It has been shown that the components of the blink reflex are attenuated and abolished with increasing concentrations of propofol.[2] This was demonstrated with 10 minutes stepwise increases in propofol.[2] We hypothesized that the blink reflex could be used to assess LOC for induction of anesthesia with propofol. The evoked blink reflex was electromyographically recorded and its relation to the depth of anesthesia induced with propofol was investigated.

Under IRB approval and informed consent, 11 patients received 1% propofol at a slow infusion of 3.3 mL/kg/h until LOC, defined as absence of corneal reflex (drop of sterile water applied every 6 s). Depth of sedation/anesthesia was assessed using a modified RASS scale (MRASS) ranging from 0 (awake) to 5 (loss of corneal reflex) during induction. After remifentanil, and at the beginning of propofol administration, simple stimuli were applied every 6 seconds to stimulate the trigeminal nerve; the evoked blink reflex was

Table 1: Patient demographics and baseline recorded data. Results are mean±standard deviation.

Patient demographic data and baseline values (before induction)	
Age (years)	47.45 ± 16.11
Weight (Kg)	73.73 ± 10.99
Height (cm)	165.82 ± 11.48
ASA	1 ASA I / 8 ASA II / 2 ASA III
Gender	3 Males / 8 Females
R1 baseline Latency (ms)	10.81 ± 0.68
R1 baseline Duration (ms)	9.53 ± 1.37
R1 baseline Area (mV.ms)	961.63 ± 614.41
R1 baseline Amplitude (mV)	418.80 ± 292.68

Table 2: Time, MRASS scale and estimated Ce of propofol when R_1 was last seen and at loss of consciousness (LOC), defined as loss of corneal reflex (drop of sterile water applied every 6sec). Correlation analysis between estimated Ce of propofol and MRASS, MRASS and area of R_1, MRASS and amplitude of R_1, estimated Ce of propofol and area of R_1 and estimated Ce of propofol and amplitude of R_1. Correlations were performed using the Spearman rank r test for non-normally distributed data. Results are mean±standard deviation or median [minimum, maximum].

	R_1 last seen	LOC
Time (seconds)	118.45±33.13	143.27±35.87
MRASS	2 [0-4]	5 [3-5]
Propofol Ce (μg/mL)	3.37±1.23	4.10±1.26
MRASS versus Propofol Ce	0.905±0.039*	
MRASS versus Area of R_1	-0.803±0.081*	
MRASS versus Amplitude of R_1	-0.811±0.073*	
Propofol Ce versus Area of R_1	-0.785±0.112*	
Propofol Ce versus Amplitude of R_1	-0.808±0.109*	

*Statistically significant at a level 0.001

assessed on the orbicularis oculi. Recordings and stimulations were conducted with VikingQuest's neurophysiological device. MRASS and blink reflex responses were recorded at every stimulation. Amplitude and area under the curve of the R1 component of the blink reflex were calculated offline. Propofol Ce was recorded every 5 seconds. At LOC the propofol's effect-site (Ce) concentration was noted, and the TCI target set to 25% of the Ce at LOC. Then, propofol concentrations were titrated according to the clinical protocol in practice. For this study data were analyzed until LOC. Demographics and baseline values are presented in Table 1. Main results are presented in Table 2. The corneal reflex was present in all patients when R1 was abolished. We found strong correlations between variables. Baselines of R1 components were similar to those in the literature.[2,3] Loss of R1 component occurred earlier than the loss of corneal reflex. Areas and amplitudes of the blink reflex decrease with increasing depth of anesthesia. Loss of R1 could be an objective indicator of the propofol Ce adequate for anesthesia. This information could be helpful to assess the moment of LOC and thus personalize anesthesia.

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1. Reshef ER, Schiff ND, Brown EN. A neurologic examination for anesthesiologists: assessing arousal level during induction, maintenance, and emergence. *Anesthesiology*. 2019;130:462–471.
2. Mourisse J, Lerou J, Zwarts M, et al. Electromyographic assessment of blink reflexes correlates with a clinical scale of depth of sedation/anaesthesia and BIS during propofol administration. *Acta Anaesthesiol Scand*. 2004;48:1174–1179.
3 Mourisse J, Lerou J, Struys M, et al. Multi-level approach to anaesthetic effects produced by sevoflurane or propofol in humans: 1. BIS and blink reflex. *Anaesth*. 2007;98:737–745.
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[SNACC-42] To Study the Effect of Cerebral Perfusion Pressure Augmentation on Cerebral Lactate Pyruvate Ratio in Patients With Severe Head Injury: A Cerebral Microdialysis Study

Bindra A*, Mishra R†, Khandelwal A†, Goyal K†, Rath G†, Gupta D†, Bindra A†. **1978, India*; †*All India Institute of Medical Sciences, New Delhi, India*.

Purpose: Cerebral microdialysis helps predict ischemia/hypoxia well ahead of clinical deterioration.[1] We studied cerebral biochemistry during the first 72 hours after decompressive craniotomy for traumatic brain injury (TBI) using cerebral microdialysis (CMD). The objectives of the study were to see the effect of cerebral perfusion pressure (CPP) augmentation on lactate-pyruvate ratio (LPR), to find the incidence and prevalence of ischemia as measured by LPR, correlation between serum and brain glucose and lactate.

Methods: In this pilot study, after approval from the Institute Ethics Committee, CMD catheter was inserted in 7 adult patients undergoing decompressive craniotomy following severe TBI. If the patients had an increased LP ratio (>40), CPP was augmented by 20% with noradrenaline infusion. All patients received standard of care for management of severe TBI. Pearson correlation coefficient were calculated for correlation and logistic regression analysis was performed to assess the association between admission GCS, LPR with long-term outcome.

Results: A total of 202 hours of cerebral microdialysis monitoring data were obtained from 7 patients. Of 7 patients enrolled noradrenaline was used in 2 patients to augment the CPP. However, there was no appreciable improvement in LPR postaugmentation. There was correlation between CPP and LPR ($r=-0.56$, $P<0.001$); ICP and LPR ($r=0.88$, $P<0.001$). No correlations were seen between brain and plasma glucose and brain and plasma lactate values. was seen for 41% (82) hours of total monitoring hours. LPR was inversely associated with outcome at 3 months. Admission GCS was directly associated with outcome at 3 months but it was not statistically significant.

Conclusions: Although is a correlation between CPP and LPR but CPP augmentation alone does not improve cerebral biochemistry. Pneumbra zone biochemistry is completely different form systemic biochemistry.[2] Treating systemic vitals alone won't improve deranged cerebral physiology. More studies are required to understand and treat cerebral metabolism in head injured.

References:
1. Gupta D, Singla R, Kale SS, et al. Intracerebral hypoglycemia and its clinical relevance as a prognostic indicator in severe traumatic brain injury: a cerebral microdialysis study from India. *Neurol India*. 2016;64:259–264.
2. Gupta D, Singla R, Mazzeo AT, et al. Detection of metabolic pattern following decompressive craniectomy in severe traumatic brain injury: a microdialysis study. *Brain Inj*. 2017;13:1660–1666.

[SNACC-43] Effect of Thiopental Administration on Postoperative Neurological Complication in Patients Undergoing Clipping During Unruptured Cerebral Aneurysmal Surgery

Chung S*, Koo C*, Jeon Y*, Park H†, Baik J‡. **Seoul National University Bundang Hospital, Seongnam, Gyeonggi, South Korea*; †*Seoul National University Hospital, Seoul, South Korea*; ‡*Pusan National University Hospital, Pusan, South Korea*.

Background: Although barbiturates improve neurological outcomes in animal temporary focal ischemia models,[1,2] the clinical efficacy of thiopental administration during aneurysmal clipping for intracranial aneurysmal surgery was not established. The aim of this study was to evaluate the effect of thiopental administration and identify risk factors associated with postoperative neurological complications after cerebral aneurysmal clipping.

Methods: In this retrospective observational study, 491 patients undergoing aneurysmal clipping were analyzed. Demographic data, intraoperative hemodynamic and laboratory data, use of thiopental and packed red blood cells (pRBC), and history of comorbidities were collected. Univariate and multivariate logistic regression methods were used to identify risk factors for neurological complications. The occurrence of neurologic complications was the primary outcome.

Results: Of 491 patients, 10 patients (0.02%) had neurological complications after surgery. Thiopental administration was not associated with postoperative neurological complications. Use of pRBC (odds ratio, 4.20; 95% confidence interval, 1.14-15.4) and size of aneurysms (odds ratio, 2.50; 95% confidence interval, 1.00-6.24) were independent risk factors for postoperative neurologic complications.

Conclusions: This study shows that intraoperative thiopental administration was not associated with development of neurological complications after surgery in cerebral aneurysm patients. Use of pRBC and size of aneurysm may be associated with postoperative neurological complications after cerebral aneurysmal clipping.

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2. Nehls DG, Todd MM, Spetzler RF, et al. A comparison of the cerebral protective effects of isoflurane and barbiturates during temporary focal ischemia in primates. *Anesthesiology*. 1987;66:453–464.

[SNACC-44] Effectiveness of Regional Anesthesia for Perioperative Analgesia in Patients With Amyotrophic Lateral Sclerosis Undergoing Placement of Percutaneous Endoscopic Gastrostomy Tube

Stredny E, Morrell D, Alli V, Pauli E, Hazard S, Sinz E, Simmons Z. *Penn State Health Milton S. Hershey Medical Center, Hershey, PA*.

Introduction: Amyotrophic lateral sclerosis (ALS) is a rare degenerative neuromuscular disorder. ALS patients commonly experience dysphagia and malnutrition necessitating the placement of a feeding tube. This can be done via the insertion of a percutaneous endoscopic gastrostomy (PEG) tube. The ALS population is at high risk for PEG-related