

respectively. Extubation quality (scale-1) was superior with dexmedetomidine (54%) than fentanyl (16%) and saline (0%). Rescue drugs were used more often in saline group (34%) than fentanyl group (2%) and dexmedetomidine group (0%). Sedation and recovery scores at 30 min post-extubation were similar among the groups. **Conclusion:** Compared to saline, dexmedetomidine was superior to fentanyl in attenuating haemodynamic responses during emergence and quality of extubation, with similar sedation and recovery profile.

### Study of pattern of perioperative ECG and echocardiographic changes in the patients with aneurysmal subarachnoid haemorrhage

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**Background:** The objectives of the study were: *Primary:* Perioperative pattern of Electrocardiography (ECG) and Echocardiographic (Echo) changes till seven days following surgical clipping. *Secondary:* i) Incidence of ECG and Echo Changes following aneurysm rupture. ii) Association of ECG and Echo Changes with Clinical Grades, time elapse from Ictus to hospital admission, site of bleed and location of aneurysm. iii) Association of ECG and echo changes with intraoperative ionotropic requirement. **Materials and Methods:** This prospective, observational study was conducted in the patients undergoing clipping with subarachnoid hemorrhage (SAH) secondary to aneurysm rupture. Patients with known cardiac disease and unfit for surgery, were excluded from the study. Baseline parameters, such as, Blood Pressure, Heart Rate, ECG, Echo; Hunt and Hess, WFNS and Fisher's Scores were recorded. ECG and Echo changes were recorded preoperatively and till seven days following surgery. Serum electrolytes were kept within the normal range. **Results:** 100 patients were enrolled. 75 patients developed ECG Changes and 17 patients developed Echo changes preoperatively, including global hypokinesias and RWMA. Various ECG observed were QTc prolongation, conduction defects, ST and T wave abnormalities, tachyarrhythmias and bradyarrhythmias. Both echocardiographic and ECG changes, such as, QTc prolongation and bradycardia showed significant recovery on postoperative day-1 and 2 ( $P < 0.05$ ). Other ECG changes did not show significant recovery during study period. We did not find association between ECG and echo changes. ECG changes were not associated with increased intraoperative ionotropic requirement but patients

with Echo changes were found to have significant high ionotropic requirement. None of the patients had perioperative cardiogenic shock. **Conclusion:** Early therapeutic intervention can hasten the recovery of these changes by taking care of intracranial pathology. ECG and Echo changes were not associated with clinical grades, time elapse between ictus and admission, location of aneurysm or bleed.

### Objective monitoring of intraoperative nociception in neurosurgical patients. A preliminary study and analysis

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**Background:** Pain during neurosurgery is associated with various haemodynamic changes and adverse effects. Identification of pain and its effective management is important. Careful titration of analgesics is also required to prevent interference with the neurological assessment postoperatively. A new monitor Analgesia Nociceptive Index monitor (ANI); Metrodoloris, France) may provide objective information about the degree of pain noninvasively. The basic principle involves the influence of respiration on parasympathetic component of heart rate variability. **Materials and Methods:** The primary aim of the study was the validation of ANI against standard haemodynamic variables. The secondary aim of our study was to compare the analgesic requirements in patients undergoing spine surgery with those undergoing craniotomy. The adequacy of analgesics intra-operatively was monitored with ANI monitor. Therefore in our study, intra-operative nociception was monitored using ANI and analgesics were administered as and when ANI values fell below 60. Patients aged 18 to 60 years, undergoing craniotomy and patients undergoing lumbar laminectomy and discectomy were recruited. Intraoperative monitoring included standard anaesthesia monitoring, ENTROPY (RE/SE) and ANI. **Results:** 21 patients undergoing craniotomy for various lesions and 11 lumbar PIVD patients undergoing laminectomy were included. HR, MAP increased and ANI decreased with each noxious stimuli. HR and MAP are commonly used to monitor pain intra-operatively. ANI monitor may help us in identification of the cause of change in HR and MAP. **Conclusion:** ANI monitor identifies pain with as much sensitivity as hemodynamic variables. It is definitely superior to SE and RE as monitor of intensity of pain. Change in ANI values parallel the changes in haemodynamics during painful stimulation.