

427680 - COMBINED INTRAOPERATIVE ANESTHESIA & ANALGESIA MONITORING IMPACT ON SAFETY & RECOVERY: CINAAMON INTERIM ANALYSIS.

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Introduction: One challenge of today's anesthesiologist is to reach optimal hypnosis, analgesia and paralysis to provide safe general anesthesia (GA) with rapid recovery. Unfortunately, anesthesia stations providing vital signs monitoring and minimal alveolar concentration (MAC) lack precision to titrate medication. Moreover, over or undertreatment results in adverse events for patients. Advanced monitoring with NOL index offers a more precise analgesia monitoring (PMD-200™ Monitor, Medasense, Israel) while Bispectral index (BIS™, Medtronic, USA) assesses hypnosis. Although improved safety with BIS has been published, combining BIS and NOL to improve patient outcomes has not yet been studied. We hypothesized that perioperative safety and recovery would improve when both depth of analgesia and anesthesia are monitored versus standard of care (SOC).

Methods: After REB approval, 30 patients on Enhanced Recovery After Surgery program (colorectal surgery) equipped with low thoracic epidural were randomized to group M (CINAAMON protocol with BIS and NOL) or group C (SOC). Baseline Mean Arterial Pressure (BMAP) was assessed before incision. For group M, remifentanyl infusion targeted $10 < \text{NOL} < 20$. Desflurane targeted $40 < \text{BIS} < 60$. Phenylephrine infusion was used to maintain MAP over 90% of BMAP or > 65 mmHg. Group C anesthesiologists were blinded to BIS+NOL values. Remifentanyl and phenylephrine infusions maintained MAP within a range of 10% of BMAP or > 65 mmHg. Desflurane concentration was set to 0.8 MAC. All data were electronically recorded every 5 seconds. In Post-anesthesia care unit (PACU), patients were evaluated for pain, analgesia requirements, sedation, postoperative nausea/vomiting (PONV) and Aldrete Score every 30 minutes. Statistical analysis was done using T-test for means or Mann-Whitney for medians. Correlation calculations used Spearman Rank's.

Results: Interim analysis on the first 30 patients. M group showed decreased desflurane consumption (13.4 vs 15.7 mL/h, $p=0.006$), faster extubation time (4.1 vs 6.6 minutes, $p=0.028$) and faster time to PACU-Aldrete-score > 9 (0.51 vs 1.1 hour, $p=0.046$). Time with BIS < 40 ($p=0.075$), phenylephrine consumption ($p=0.18$) and time with MAP $< 80\%$ ($p=0.53$) show a better safety profile in group M but did not reach significance at this stage of the study. Non-significant longer time with MAP > 110 mmHg ($p=0.12$) was observed in Group M. In PACU, pain score at arrival was correlated with intraoperative remifentanyl consumption ($\rho=0.736$, $p<0.001$). After 90 minutes, pain score improved significantly in group M ($p=0.04$). Other outcomes in PACU such as sedation, analgesia requirement, PONV did not vary significantly between groups at this stage of the study.

Discussion: GA conducted with a combined BIS+NOL monitoring had significant impact on recovery outcomes with faster extubation and discharge from PACU. CINAAMON protocol did slightly but not significantly improve intraoperative safety related to hemodynamic and hypnosis outcomes.

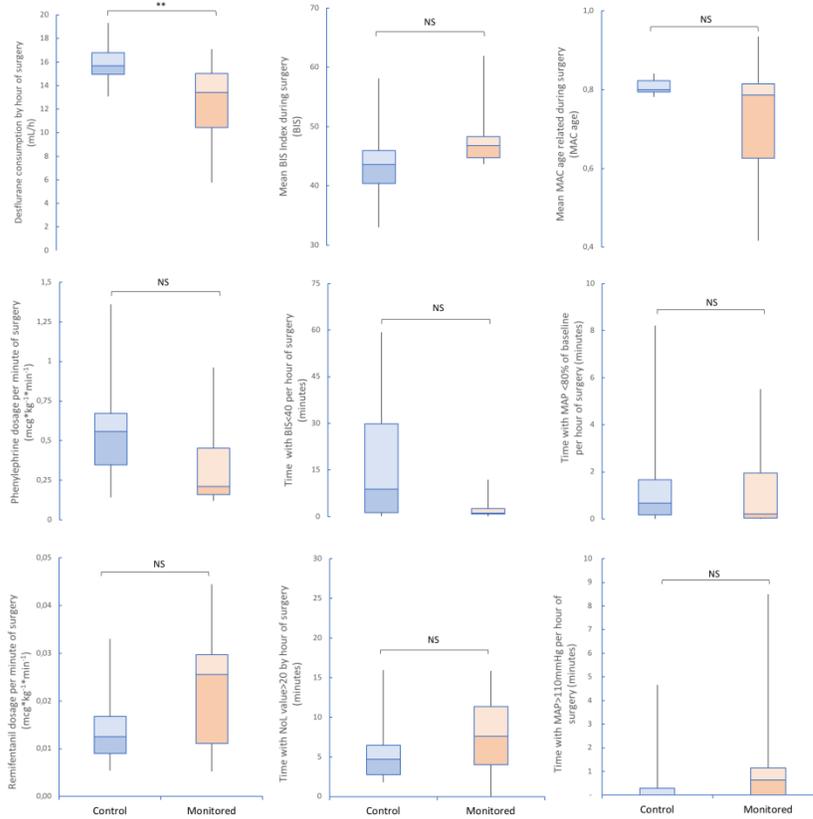
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Intraoperative medication consumption and safety outcomes



Intraoperative medication consumption and safety outcomes of group Control (standard of care) and group Monitored (BIS and NOL). NS p>0.05, * p<0.05, ** p<0.01.