A744
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Room Area F

Comparing Index of Consciousness and Bispectral Index during Propofol Induction

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Introduction: The Index of Consciousness (IOC) (Morpheus Medical Systems, Barcelona, Spain) measures cerebral hypnotic drug effect based on spontaneous electro-encephalogram (EEG), using a symbolic dynamics algorithm. We measured IOC (version 1.2) and bispectral index (BIS) (Aspect Medical Systems, MA, USA) during a propofol induction. We compared the performance of IOC and BIS as measure for changes in effect-site concentration of propofol (CePROP). We also studied baseline variability in the awake patient.

Methods: After ethics committee approval and patients' informed consent, we included 15 ASA I and II patients (10 female, 5 male), aged 50 (±15) years, weight 72 (±14) kg, height 167 (±9) cm. For BIS, we used a BIS XP sensor (Aspect Medical Systems) and for IOC, three Blue Sensors (Ambu, Ballerup, Denmark). Propofol 1% was administered at 300 ml/h with RUGLOOPii (Demed, Temse, Belgium) until maximum burst suppression was found on EEG. RUGLOOPii calculates the time-synchronized CePROP, using the Schnider model, with a fixed time to peak effect of 1.6 min. (1,2) All data was extracted in 5 seconds intervals. The coefficient of variation (CV) is calculated during 2 minutes of measurement in all awake patients. Prediction probability (pK) was calculated as a measure of accuracy for detecting change in CePROP. (3) CePROP was rounded to 0 decimals. Statistical significance was tested by an unpaired t-test (p<0.05).

Results: No data was excluded. The individual BIS and IOC versus CePROP is shown in respectively figure 1 and 2. The CV for BIS and IOC was respectively 11.5 and 15.3, indicating a higher variability at baseline for IOC. Mean pKs for BIS and IOC were not statistically different, 0.89 (±0.03) and 0.89 (±0.05) respectively.

Discussion: Although baseline variability of IOC is higher compared to BIS, the all-round performance for predicting CePROP during propofol induction is comparable. The high CV for BIS is caused by one outlier with a low BIS while being awake. After exclusion, CV for BIS was 3.1, which is more in line with CV results from other studies.

Conclusion: During induction of propofol the accuracy to measure changes in CePROP appears to be comparable between IOC and BIS, although IOC might be improved for measurements in the awake.

References:

From Proceedings of the 2009 Annual Meeting of the American Society Anesthesiologists.

Figure 1
