## 3AP2-6

### The effect of ketamine and rocuronium on the quantium consciousness index (qCON) during steady-state anesthesia with propofol and remifentanil

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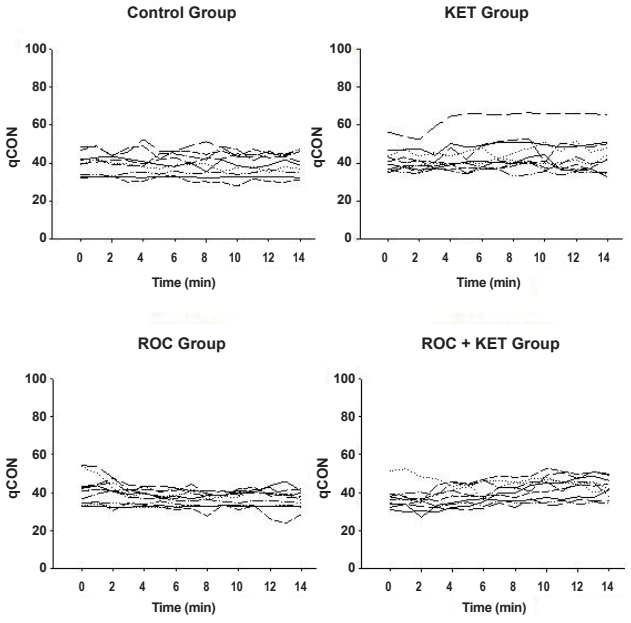
**Background:** We tested the effects of ketamine (KET) and rocuronium (ROC) on an ANFIS transformation algorithm of the electroencephalogram (EEG), as calculated by the qCON® monitor (Quantium Medical S.L., Barcelona, Spain). We reanalyzed raw EEG obtained from a prior study[1].
**Methods:** After ethics' committee approval, 41 patients were allocated to four groups. Baseline measurements were performed after implementing calculated steady-state anaesthesia with propofol and remifentanil. No additional drugs were given in the CONTROL group. The KET group received a bolus of ketamine (0.4mg/kg) followed by 1 mg/kg/h. The ROC group received rocuronium (0.9 mg/kg). The ROC+KET group received both. All data was stored during 14 minutes after baseline (Figure 1). qCON was extracted post-hoc from raw EEG obtained on the mastoid position by the A-line® AEP monitor (Danmeter, Odense, Denmark). Mean qCON changes from baseline were tested within each group (*t*-test+Dunnett) and compared with CONTROL.
**Results:** In CONTROL, one patient was excluded due to artifacts not properly filtered out by the qCON artifact rejection algorithm. Compared to baseline, qCON increases in KET ($p < 0.05$ at min 9, mean (SD): 41(9) versus 46 (9)), decreases in ROC ($p < 0.05$ from min 2 to min 14, mean (SD): 41(8) versus 36(4) at lowest point) and increases in ROC+KET ($p < 0.05$ from min 9 to min 14, mean (SD): 37(6) versus 43(6) at highest point). In the intergroup comparison, only the changes in ROC and ROC+KET remained significantly different compared to the CONTROL group.




*[Figure 1: raw qCON values]*

**Conclusion:** Rocuronium decreases qCON when calculated from EEG on a mastoid channel. The increase in qCON evoked by ketamine is more pronounced when electromyographic activity is inhibited by rocuronium. Our conclusions must be confirmed by frontal derived EEG. Results may be affected by the applied artifact rejection algorithm, which is not developed for mastoid electrode position.
**References:**
1. Vereecke HE, et al. Anesthesiology 2006; 105: 1122-34

## 3AP2-7

### Quantitative analysis of the electroencephalogram under desflurane anesthesia: changes in the bispectral index and suppression ratio

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**Background and Goal of Study:** Desflurane is one of the popular general anesthetics with rapid onset and offset. But there are few studies analyzing the desflurane effects on electroencephalogram, especially bispectral index (BIS) and suppression ratio (SR). The purpose of the present study was to clarify the changes in the BIS values under desflurane anesthesia between light and deep levels.
**Materials and methods:** After obtaining an approval of Hospital Ethics Committee and written informed consent, 22 ASA physical status I and II patients scheduled for elective surgery were enrolled. Anesthesia was maintained with combined epidural and desflurane anesthesia. On arrival in the operating room, the BIS (BIS A-3000, version 4.1; Covidien, CO, USA) sensor was placed as recommended by the manufacturer. Epidural catheter was inserted and 0.5-1.0% ropivacaine was used. Anesthesia was induced with fentanyl, propofol and rocuronium, and maintained with O2, air and desflurane. Both BIS and SR values were recorded at desflurane concentrations of 0.5, 1.0, 1.5 and 2.0 MAC. The measurements were performed 20 minutes after the changes in desflurane concentrations. Data are expressed as mean±SD. Statistical analysis was performed using ANOVA and post-hoc Bonferroni. P values< 0.05 were considered statistically significant.
**Results and discussion:** Of 22 patients, 10 patients underwent major surgeries and the others were minor surgeries such as urological, gynecologic and orthopedic. The BIS values at each desflurane concentration were 54±8 (0.5 MAC), 39±6 (1.0 MAC), 38±9 (1.5 MAC) and 23±13 (2.0 MAC), respectively. The BIS values at 0.5 MAC were significantly higher compared with the others. There were no significant differences in the BIS values between 1.0 and 1.5 MAC. Isoelectric EEG was observed in 3 out of 13 patients at 1.5 MAC and 6 out of 8 patients at 2.0 MAC, although no patients showed isoelectric EEG at both 0.5 and 1.0 MAC. SR was 6±19 at 1.5 MAC and 35±37 at 2.0 MAC, respectively. The BIS values have not decreased in a dose-dependent manner between 1.0 and 1.5MAC of desflurane. This issue is probably caused by the proprietary algorithm of the BIS monitor. Anesthesiologists have to know this issue not to misinterpret the depth of anesthesia. At desflurane concentrations more than 1.5MAC, SR increased in a dose-dependent manner. conclusion; Present study demonstratesd that BIS monitor has not shown linear function at moderate to deep desflurane levels.

## 3AP2-8

### Randomized comparative study on the effects of epidural dexmedetomidine on heart rate variability during general anesthesia in patients undergoing gastrectomy

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**Background and Goal of Study:** Dexmedetomidine causes sedation, anesthesia and marked cardiovascular effect, such as bradycardia and hypotension. Elhakim et al. investigated the action of preemptive epidural dexmedetomidine on postoperative pain for the patients undergoing thoracic surgery. We hypothesized that preemptive thoracic epidural dexmedetomidine would increase parasympathetic activity, it could detected by analyzing heart-rate variability.
**Materials and methods:** A total of 43 patients undergoing gastrectomy were enrolled. Patients were randomly divided into two groups. Dexmedetomidine group (n=22) vs Control group (n=21)]. A thoracic epidural catheter was placed before the surgery. After the induction, patients received the epidural dexmedetomidine(1.5㎍/㎏) mixed up to 10㎖ of normal saline before the surgical incision. Electrocardiogram data acquisition was done after vital sign stabilization following anaesthesia induction (T1) and 30 min after the administration of study drug (T2).
**Results and discussion:** No differences were found between groups at total power, high frequency, low frequency and ratio of LF/HF.