The Effect of Nociceptive Stimulation on the qNOX and qCON

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Background/Introduction: Nociception is the processing of the information generated by nociceptor activation. The administration of analgesics and hypnotic drugs causes a decrease in nociception. Monitoring nociception under general anesthesia has not been completely solved despite the number of different methods developed over the last decade.

Methods: Thirty patients scheduled for ambulatory surgery procedures under general anesthesia were included in the study. The qNOX decreases when the analgesic component of anesthetic drug effect increases. The qNOX and qCON were correlated with the effect site concentration (Ce) of propofol and remifentanil. For each drug predicted effect site concentrations were divided into 4 levels of concentration ranges. The Ce values corresponding to sudden changes in dosage were rejected. For each patient the mean of the indices of each drug concentration range was calculated and used to find the prediction probability (Pk) and its standard error (SE). The ability to predict movement as a response to a noxious stimulation defined as laryngeal mask airway (LMA) insertion was also evaluated for the qNOX and qCON indices. The mean values for the qNOX and qCON were calculated over a 1-minute period before the LMA insertion. The stimuli were classified as movers or non-movers depending on the detection of movement in the 1-minute period after applying the stimulus. Both groups of stimuli were tested for significant differences with the Student t-test.

Results: The evolution of the indices versus Ce of remifentanil validated by the Pk-value (SE) were: qNOX=0.846 (0.025) and qCON=0.873 (0.024). For the evolution of the indices versus the Ce of propofol their Pk-values (SE) were: qNOX=0.894 (0.026) and qCON=0.921(0.022). Regarding prediction of movement as a response to LMA insertion for qNOX values (mean±SD) were 70±23 for movers and 43±18 for non-movers (p=0.045) and for qCON were 58±15 vs 43±12 (p=0.712). The population was 6 to 19 for movers and non-movers respectively.

Conclusions: We concluded that both qNOX and qCON indices predicted the Ce of remifentanil and propofol while the qNOX index predicts the movement as a response to LMA insertion better than the qCON.

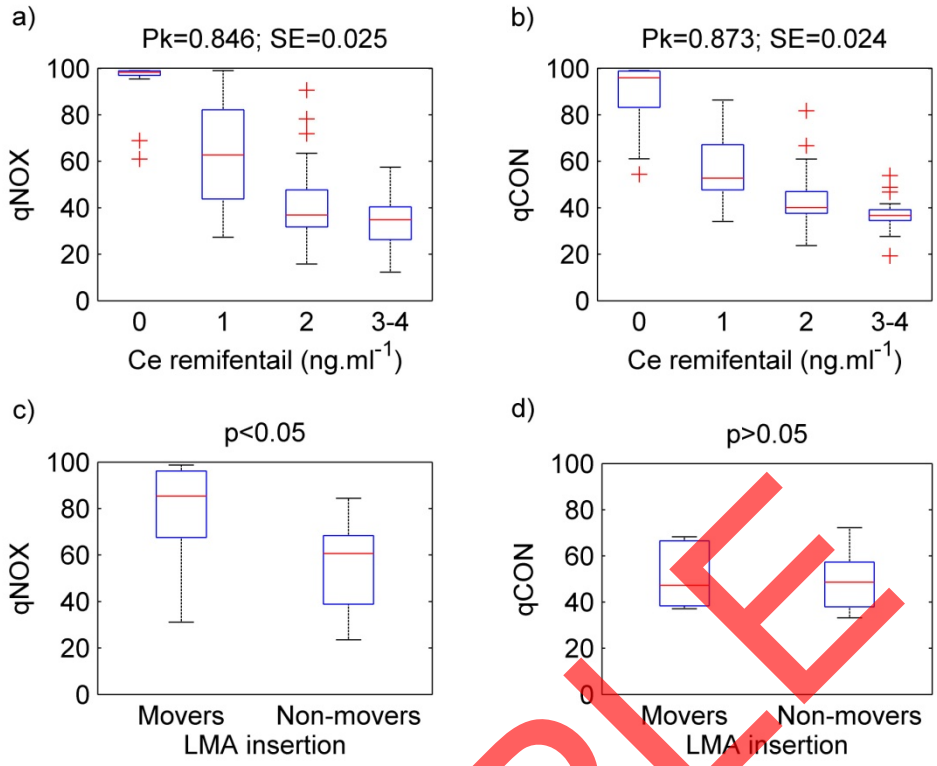

Figure 1. Boxplot for the evolution of the (a) qNOX and (b) qCON indices versus the Ce remifentanil. Boxplot for the prediction of movement of the (d) qNOX and (e) qCON indices as a response of LMA insertion.