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Variations of the Analgesia Nociception Index During Propofol Anesthesia for Total Knee Replacement.

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Abstract

OBJECTIVE::

The Analgesia Nociception Index (ANI) monitor (Mdoloris Medical System, Lille, France) measures the relative parasympathetic tone as a surrogate for the anti-nociception/nociception balance during general anesthesia. The aims of this observational study were to test whether ANI could early detect hemodynamic reactivity ("HemodR") during propofol anesthesia, measure pain in conscious patients after surgery and determine ANI predictive thresholds.

METHODS::

After institutional approval and informed consent, adult patients scheduled for total knee replacement have been included. Propofol was administered using a target-controlled infusion device and sufentanil was administered at induction and in case of "HemodR", defined as a 20% increase of heart rate (HR) or systolic blood pressure (SBP). Data were collected before start of surgery ("NoStim"), in case of "HemodR" and after awakening before and after pain had been treated by truncular analgesia. Non parametric test were performed. Thresholds were determined using a ROC curve analysis. Results are presented as median (interquartile range).

RESULTS::

27 patients have been analysed. ANI decreased from 82 (30) at "NoStim" to 47 (22) at "HemodR", while HR increased moderately from 61 (14) to 65 (18) and SBP increased significantly from 91 (16) to 151 (25). ROC curve analysis led to a threshold of 63 for "HemodR" detection (Se=80%, Sp=88%, AUC=0.92), while ANI performance in awake patients was lower.

DISCUSSION::

ANI measures during propofol anesthesia are coherent with the evolution of the analgesia/nociception balance while its performance decrease in awake patients. Further clinical validation should focus on demonstrating the benefit of maintaining ANI over 63 during surgery.

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