Print Close

A3044
October 23, 2017
43031.541667 - 43031.625
Room Exhibit Hall B2 - Area B

Individualized Anesthesia: Independent Predictive Factors for the Propofol Induction Target

Catarina S. Nunes, Ph.D., Ana Leitão Ferreira, M.Eng., Rui P. Correia, M.Eng., Pedro P. Amorim, M.D.
Universidade Aberta, Porto, Portugal

Disclosures: C.S. Nunes: None. **A. Leitão Ferreira:** None. **R.P. Correia:** None. **P.P. Amorim:** None.

The importance of personalized medicine is becoming increasingly recognized. We previously reported a wide variability in individual patient propofol requirements for loss of consciousness (LOC) [1]. The aim of the present study was to identify the physiologic variables that may contribute to the observed inter-individual variability.

Data from 217 adult patients submitted to neurosurgical procedures were retrospectively analyzed. Only patients submitted to TIVA with propofol and remifentanil were considered. In all cases 1% propofol was infused at a slow rate (around 200ml/h), with a TCI pump set to “TCI-view mode”, in order to allow the precise identification of the amount required for LOC. LOC was identified as lack of eye opening to name calling and a tap on the forehead. Variables considered for analysis were: age, weight, height, lean body mass (LBM), gender, ASA status, type of surgery, baseline arterial pressure (systolic, dyastolic and mean), baseline heart rate (HR) and baseline BIS value. The amount of propofol (in mg) required for LOC, the propofol predicted effect-site concentration (EC in ug/ml) at LOC (Schnider’s PK model), and the induction sequence (propofol first or opioid first) were also noted. Multivariate Regression Analysis was used to determine if any of the patient data and baseline recordings were predictors of the propofol amount (mg and mg/kg) required for LOC, or of the predicted propofol EC at LOC. Data are mean±SD or %.

Data are presented in Table 1 and Figure 1. The propofol EC at LOC ranged from 1.5 to 7.4ug/ml, with an IQ range [3.1-5.3] (71%). The total amount of propofol in mg at LOC ranged from 38 to 242mg, with an IQ range [71.8-116.3] (62%). Propofol for LOC mg/Kg ranged from 0.6 to 2.9mg/Kg, with an IQ range [1.1-1.7] (55%).

The multivariate regression analysis showed as independent predictive factors for the propofol EC at LOC: gender ($p<0.001$) and baseline SAP ($p<0.001$). These variables explained 25% of the variability ($p<0.001$). For the propofol total amount required for LOC in mg the multivariate regression identified as independent predictive factors: age ($p<0.001$), gender ($p=0.018$), weight ($p=0.009$) and baseline SAP ($p<0.001$). These variables explained 31% of the variability ($p<0.001$). For the propofol total amount in mg/kg the independent predictive factors were: age ($p<0.001$), gender ($p=0.045$), weight ($p<0.001$) and baseline SAP ($p<0.001$). These variables explained 30% of the variability ($p<0.001$). In all models, the female gender and age decreased the propofol requirements, while higher SAP baseline values increased the propofol doses.

We show a wide variability in individual patient requirements for propofol to induce LOC, which is critical. This variability was observed even when EC were used, although PK models already incorporate gender, age, weight and height. Interestingly, the baseline SAP and gender, proved to be independent predictive factors and explained at least 25% of the variability. Further research should be directed at identifying the physiologic variables that contribute to the observed inter-individual variability.

References: [1] ASA Abstracts 2015: A4151

Acknowledgements: LAETA-INEGI; FCT: SFRH/BD/98915/2013

Figure 1

Table 1: Patient demographics and recorded data

Patient demographic data and baseline values (before induction)	
Age (years)	53 ± 15
Weight (Kg)	69 ± 13
Height (cm)	164 ± 11
LBM (Kg)	47 ± 9
Baseline SAP (mmHg)	140 ±20
Baseline DAP (mmHg)	82 ±11
Baseline MAP (mmHg)	102 ±13
HR (bpm)	72 ± 14
Baseline BIS	93 ± 10
Male /Female	48.8% /51.2%
ASA status: I/ II/ III	26.4% /56.4 % / 17.3 %
Type of Surgery: Craniotomy /Spinal	57.2 % /42.8 %
Propofol Data at Loss of Consciousness (LOC)	
Total dose in mg	**96 ± 32**
Total dose in mg/Kg	**1.4 ±0.5**
Effect-site concentration in ug/ml	**4.3 ± 1.3**

Figure 2

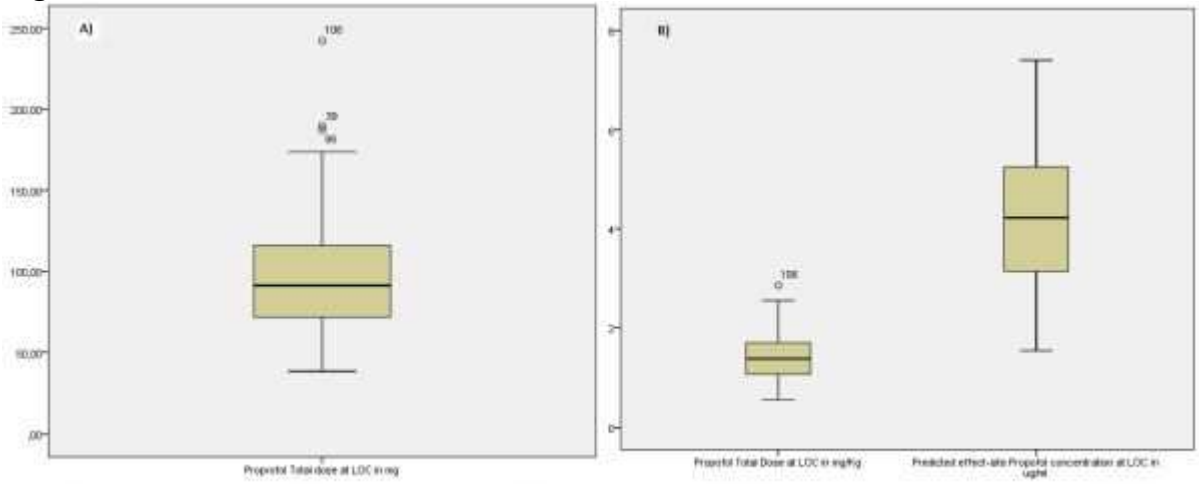

Figure 1: Data distribution for the propofol requirements at loss of consciousness (LOC): A) - propofol total dose in mg; B) - propofol total dose in mg/Kg and predicted effect-site propofol concentration (ug/ml) uisng the Schnider Pk Model.

Filename:	C:/ASA/content/asaabstracts/2017/DRUG DISPOSITION/abs_a4357.htm