

THE RESPONSE OF BISPECTRAL INDEX TO LARYNGOSCOPY, COMPARISON BETWEEN HEALTHY HEMISPHERES DURING PSEUDO-STEADY STATE PROPOFOL AND REMIFENTANIL ANESTHESIA

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Introduction: We observed whether clinically relevant asymmetric responses occur on bilateral BIS measurements after laryngoscopy in healthy adults during propofol and remifentanyl anesthesia. We hypothesized that high or low dose of remifentanyl may affect the interhemispheric difference.

Methods & Materials: After ethics committee approval and patients informed consent, 40 cervical and lumbar hernia patients were included. We measured bilateral BIS(VISTA-XP4 with BIS-quarto™ sensor)(Covidien, Dublin, Ireland). Effect-site titration of remifentanyl(CeREMI) (Minto Model) and propofol(CePROP) (Schnider model) was administered. All data was captured by RUGLOOPII(Demed, Temse, Belgium). CeREMI was started in high(5ng/ml) or low(3ng/ml) dose until steady state. CePROP was started at 2μg/ml and increased stepwise(0.5μg/ml/step) until loss of consciousness(LOC), defined as a transition from level 3 to 2 on the Modified Observers Assessment of Alertness and Sedation scale. After an equilibration delay, laryngoscopy was performed and a blinded BIS response was measured for 3 minutes. Interhemispheric differences in BIS larger than 10% are clinically relevant.

Results: No demographic differences were present between high and low CeREMI groups, except for age(Table 1). Time to LOC and BIS at LOC was not statistically different between groups(Table 2). CePROP at laryngoscopy was 3.4±0.7 and 3.7±0.9(Mean ±SD) for respectively the low and high CeREMI group. Regardless of CeREMI, we could not observe interhemispheric BIS responses larger than 10%.

Conclusion: Bilateral BIS measurements may only provide clinical relevant information in diseased brains, as the normal population does not seem to suffer from large interhemispheric differences in BIS behavior.

Table 1

Demographics	Age (years+/- SD)	Weight (kg+/- SD)	Height (cm+/- SD)	Time to LOC (sec+/-SD)
3CeREMI group	50 +/- 11 *	74 +/- 16	170 +/- 9	598 +/- 124
5CeREMI group	43 +/- 9 *	77 +/- 14	173 +/- 10	609 +/- 170

Table 2

	BIS at LOC	Median BIS one minute before laryngoscopy (baseline)	Median BIS one minute after laryngoscopy	Delta BIS = BIS response
Left hemisphere				
3 CeREMI group	68 +/- 10	57 +/- 9	59 +/- 10	2 +/- 5
5 CeREMI group	73 +/- 8	57 +/- 9	56 +/- 9	-1 +/- 5
Right hemisphere				
3 CeREMI group	69 +/- 9	56 +/- 10	60 +/- 10	3 +/-6
5 CeREMI group	73 +/- 10	57 +/- 10	56 +/- 9	-1 +/-5