TITLE: BISPECTRAL INDEX (BIS) MONITORING DECREASES PROPOFOL USAGE IN PROPOFOL-KETAMINE OFFICE-BASED ANESTHESIA*

AUTHORS: B.L. Friedberg, MD[+] and J.C. Sigl, PhD[^].
AFFILIATION: [+]Corona Del Mar, CA; [^]Aspect Medical Systems, Natick, MA.

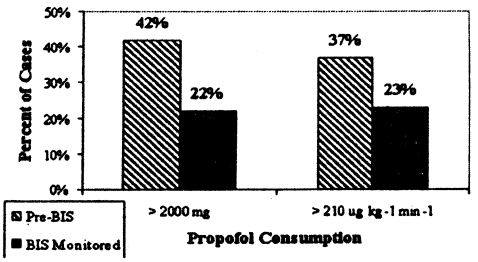
INTRODUCTION: BIS monitoring has been demonstrated to reduce propofol usage in propofol/alfentanil/N_2O technique.[1] The current study investigated the effect of the implementation of routine BIS monitoring on propofol consumption during office-based propofol-ketamine[2] anesthesia.

METHODS: A retrospective analysis of 264 consenting patients receiving propofol-ketamine anesthesia for office-based plastic surgery was performed. Prior to the implementation of routine BIS monitoring (A1050 monitor, Aspect Medical Systems), patients, in the absence of opioids, had propofol (5 mg· ml^{-1} via 60 gtts· ml^{-1} intravenous set) titrated to standard clinical signs. Subsequently, patients monitored with BIS were titrated to a BIS of ≥ 60 but < 70, with the same initial infusion. After achieving adequate hypnosis, 50 mg of ketamine was administered prior to injection of local anesthetic. Purposeful response to the local injection was treated with additional ketamine (25-50 mg). Cases performed before the implementation of routine BIS monitoring (Pre-BIS, n=135) were compared with those performed after implementation (BIS Monitored, n=129). Propofol usage outliers were defined as those patients requiring > 2,000 mg propofol. The high propofol dose rate group was defined to contain the upper 1/3 of cases by using a threshold of 210 μ g· kg^{-1}· min^{-1}. Statistical comparisons were by t-test and chi-square, with statistical significance defined as $p < 0.05$.

RESULTS: There were no statistically significant differences between the groups in age, weight, gender or anesthetic duration. Total average propofol consumption decreased by 20%. Ketamine consumption was unchanged.

	Pre-BIS (mean ± s.d.)	BIS Monitored (mean ± s.d.)	p
Total Propofol (mg)	2112 ± 1401	1696 ± 1392	0.016
Propofol Infusion Rate (ug kg^{-1} min^{-1})	197 ± 63	179 ± 54	0.014
Total Ketamine (mg)	84 ± 41	79 ± 41	n.s.
Ketamine Dose (mg kg^{-1})	1.27 ± 0.58	1.24 ± 0.63	n.s.

The proportion of patients receiving greater than 2000 mg of propofol decreased 48%, from 56/135 in the Pre-BIS group to 28/129 in the BIS Monitored group (p=0.001). The proportion of patients receiving high propofol infusion rates decreased by 39%, from 50/135 in the Pre-BIS group to 29/129 in the BIS Monitored group (p=0.010).



DISCUSSION: No patients experienced hallucinations in either group but pleasant colorful dreams were reported more often in the BIS group. Statistical analysis confirmed the clinical impression of decreased propofol consumption. The decrease in average propofol consumption of 416 mg translates into a average per patient cost savings of $24.92, using a propofol cost of $12.32/200 mg ampoule and accounting for waste.

REFERENCES:

1) Anesth 87:808-15, 1997.
2) Aesth Plast Surg 17:297-300, 1993.

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