

Assessment of Patient State Index (PSI) and Bispectral Index (BIS) Values during the Recovery Period after Outpatient Surgery.

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Introduction

The EEG-based patient state index (PSI) monitor has been demonstrated to assess consciousness during general anesthesia (1,2). Due to the failure of the PSI to return to the preinduction baseline value with recovery of consciousness, it has been suggested that a difference may exist between the PSI and bispectral index (BIS) with respect to their sensitivity to residual (subhypnotic) levels of volatile anesthetic drugs (1). This study was designed to evaluate the relationship between the PSI and BIS values and the residual end-tidal desflurane concentrations during the early recovery period from general anesthesia.

Methods

19 consenting outpatients scheduled for laparoscopic surgery were enrolled in this prospective study. Both the PSI (with PSArray2) and the BIS (with XP platform) were applied prior to induction of anesthesia. Anesthesia was induced with propofol, 2 mg/kg IV, and fentanyl 1 µg/kg IV. Desflurane 2-6% end-tidal in combination with N₂O 60% was administered for maintenance of anesthesia. Comparative PSI and BIS values along with the end-tidal concentration of desflurane at specific time intervals during the emergence period were recorded (means±SD; a, P<0.05 vs PSI value; b, p<0.05 vs Baseline value).

Results

Even though the PSI exhibited a good correlation with the BIS during emergence period ($r = 0.74$), the PSI values were consistently lower than the BIS values. Interestingly, the PSI values displayed a better correlation with the end-tidal concentration of desflurane than the BIS at the times of eyes opening ($r = 0.56$, $r = 0.1$, respectively) and extubation ($r = 0.71$, $r = 0.31$, respectively).

Discussion

The PSI appears to be more sensitive to the residual levels of desflurane than the BIS monitor during the early postoperative period.

(1) *Anesth Analg.* 2002;95:1669-74; (2) *Anesthesiology.* 2002;97:82-9

	<u>PSI</u>	<u>BIS</u>
Baseline	97±3	96±3
End of anesthesia	45±16b	51±11b
Eye opening	81±13b	88±11b
Extubation	81±14b	89±13
Following commands	83±13b	91±9
Orientation	86±9b	93±8a