NEUROSCIENCES AND ANESTHETIC ACTION III

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TITLE: PROPOFOL INFUSION VS. THIOPENTAL/ISOFLURANE FOR OUTPATIENT ANESTHESIA

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Introduction. Propofol has been demonstrated to be superior to thiopental (STP), as a bolus intravenous technique combined with N₂O for out-patient anesthesia. Constant infusion propofol offers advantages over repeat bolus propofol, and the use of a volatile agent to maintain an anesthetic is generally preferred over repeat bolus thiopental. The purpose of this study was to compare constant-infusion propofol to thiopental/isoflurane for outpatient general anesthesia.

Methods. After approval by the Human Subjects Committee and informed consent, 23 patients scheduled for a variety of outpatient procedures were randomly assigned to a Propofol (PRO) Group or a Thiopental (STP) Group. Patients assigned to the STP Group received an induction dose of 5 mg/kg thiopental over 30 sec. and isoflurane 0.2%-2.0% as necessary to maintain anesthesia. Patients assigned to the PRO Group received an induction dose of 2.5 mg/kg propofol over 30 sec. and an infusion of propofol 0.10-0.20 mg/kg/min as necessary to maintain anesthesia. Both groups were given Vecuronium 0.12 mg/kg for endotracheal intubation and q.s. for maintenance of muscle relaxation; both groups were given 30% O₂/70% N₂O; all patients received endotracheal intubation and mechanical ventilation. Both the propofol infusion and the isoflurane were turned off when the surgeon estimated about 5 minutes to go in the procedure. The N₂O was turned off at the end of the procedure. Reversal of muscle relaxation was done with neostigmine 0.06 mg/kg and glycopyrrolate, 0.01 mg/kg i.v. Demerol 25 mg i.v. was administered for pain. Variables measured included heart rate, blood pressure, induction times, emergence times, OR and recovery complications, and Aldrete score on admission to the recovery room. Length of recovery was measured, and patients were called at home at 24 and 48 hours after surgery to inquire about recovery problems. Data were analyzed using Student's t-test for grouped data and chi-squared analysis for categorical data. Significance was defined as p < 0.05.

Results. Of the 23 patients studied, 11 were entered into the PRO Group, 12 into the STP Group. There were no differences between groups in age (37.2 ± 2.6 yrs), weight (76.8 ± 4.7 kg) or height (167 ± 2.0 cm). The groups were not significantly different with regard to smoking history, alcohol consumption, age, ASA physical status. Anesthesia time was 74 ± 4 min for the PRO Group and 79 ± 9 min for the STP Group. Total propofol administered was 582 ± 7 mg, and total STP was 372 ± 19 mg. Isoflurane was used for 77 ± 10 min in the STP Group. Time from N₂O off to extubation were faster in the PRO Group (3.8 ± 1.1 min) compared to the STP Group (7.7 ± 1.4 min) (p < 0.05). Aldrete activity and concentration scores were significantly higher for the PRO Group compared to the STP Group on admission to the recovery room (p < 0.05). OR complications in the PRO Group consisted of pain on injection (4 pts) and trunclal erythema (1 pt); in the STP Group 2 patients experienced tachycardia (HR > 100) and hypertension (MBP > 120). Recovery complications were experienced by 8 in the STP Group and 2 in the PRO Group (p < 0.05). PRO complications were nausea and vomiting (1) and secretions and agitation (1). STP complications were nausea and vomiting (5) and severe pain (3). Also, one of these 8 patients had recall of extubation and another had severe headache. Three STP patients were admitted for control of pain. At 24 hours 1 of 11 PRO patients complained of decreased concentration, compared to 6 of 12 STP patients (p < 0.05). Time to Recovery Room discharge was 62 ± 7 min for the PRO Group and 89 ± 11 min for the STP Group (p < 0.05). Time from N₂O off to independent standing was 106 ± 11 min for the PRO Group and 149 ± 38 min for the STP Group (p < 0.05). At 24 hours, 100% (11/11) of the PRO Group would request the same anesthetic again, compared to 75% (9/12) in the STP Group.

Conclusions. Propofol/N₂O compares favorably to STP/N₂O/isoflurane for outpatient anesthesia. Propofol provided superior hemodynamic stability intraoperatively and faster wake-up time and fewer complications post-operatively. Pain on injection occurred in 4 of the patients receiving propofol, but this did not dissuade them from requesting the same anesthetic again. Shorter stays in the Recovery Room and faster times to independent standing exhibited by those patients receiving propofol may provide faster patient turnaround and less patient expense.

Reference

Figure 1
Propofol for Outpatient Anesthesia

(mean ± SEM)

(p < 0.05 between groups)