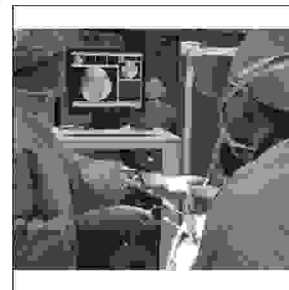


ORIGINAL

PROF-973

(TIVA) INTRAVENOUS ANAESTHESIA



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ABSTRACT... farooq_ahrana@yahoo.com **Objectives** To compare the combination of propofol ketamine , propofol fentanyl and propofol vs midazolam for TIVA in terms of haemodynamic changes, analgesia and recovery characteristics. **Design** A randomized clinical control trial. **Setting** CMH Rawalpindi. **Period.** September 2002 to August 2003. **Material and Methods.** The present study consisted of 75 patients of both sexes between the age group of 18-55 years belonging to ASA grade I and II, who were scheduled for various short surgical procedures. **Results.** Combination of propofol and ketamine provides better haemodynamic stability throughout the procedure, when compared to propofol fentanyl. Induction time was significantly shorter in the propofol group. Mean recovery time was significantly faster with propofol (12.3 min) compared to midazolam (20.4 min).. **Conclusion.** Combination of propofol and ketamine gives better haemodynamic stability during induction and maintenance of total intravenous anaesthesia. Both propofol and midazolam are safe and effective for TIVA in children. Recovery was faster and more comfortable following propofol

Key words: Total intravenous anaesthesia. Traditional anaesthetic techniques, ketamine, propofol, midazolam. Bispectral index.

INTRODUCTION

TIVA, is a newer anaesthetic technique which has risen in profile within the last 5-8 years. Induction and maintenance of anaesthesia is achieved with intravenous drugs alone; avoiding both volatile agents and nitrous oxide. The patients either breathes spontaneously or is artificially ventilated with an air/oxygen mixture. It has been made possible with the advent of a new generation of intravenous medications with unique properties. TIVA patients sleep soundly during the entire operation, feeling no pain and experiencing no anxiousness. They wake up quickly and comfortably with no memory of their procedure. Many patients prefer this type of anaesthetic

to traditional general anaesthetics since they feel comfortable, wake quickly, have less nausea, experience none of the 'hang-over' effect of a full general anaesthetic, and therefore can be discharged earlier. TIVA is safe, effective, extremely well tolerated and is the anaesthetic of choice.

AIMS AND OBJECTIVES

To compare the combination of propofol ketamine , propofol fentanyl and propofol vs midazolam for TIVA in terms of haemodynamic changes, analgesia and recovery characteristics by monitoring heart rate, mean arterial blood pressure and bispectral index.

INCLUSION CRITERIA

1. Both sexes
2. Age group- 18 – 55 years
3. ASA I –II
4. Type of surgery – short surgical procedures

MATERIAL AND METHODS

The present study consisted of 75 patients of both sexes between the age group of 18-55 years belonging to ASA grade I and II, who were scheduled for various short surgical procedures. The study was conducted at combined military hospital Rawalpindi.

The patients were randomly divided using envelop method into three groups.

Group A- Patients were induced with propofol 2mg/kg and ketamine 1mg/kg. loading doses combined with maintenance Infusions of propofol (12 mg/kg/h, adjusted to 6-9 mg/kg/h)

Group B- Patients were induced with propofol 2mg/kg and fentanyl 50 microg/kg. loading doses with maintenance Infusions of propofol (12 mg/kg/h, adjusted to 6-9 mg/kg/h)

Group C- propofol vs midazolam in pediatric patients undergoing abdominal surgery. They were further subdivided into Group 1 who received 2.5 mg/kg propofol for induction and a mean maintenance dose of 13.5 mg/kg/h propofol. Group 2 who received 0.15 mg/kg midazolam for induction and a mean maintenance dose of 0.18 mg/kg/h midazolam. Both groups received 1 to 2 mcg/kg fentanyl for pain relief. Respiration was spontaneous.

To ensure an equal state of anesthesia, the opioids were titrated to maintain heart rate and mean arterial pressure within 20% of baseline, and propofol was titrated to keep the bispectral index (BIS) less than 60 (mean 55). Neuromuscular blockade was achieved with succinylcholine. Drug dosages and the times from cessation of anesthesia to extubation, verbal response, recovery of ventilation, and neuropsychological testing,

orientation, and discharge readiness were recorded.

Group A	Induction Propofol 2mg/kg + Ketamine 1mg/kg Maintenance Propofol 6-9 mg/kg/hr
Group B	Induction Propofol 2mg/kg + Fentanyl 50 microgram/kg Maintenance Propofol 6-9 mg/kg/hr
Group C Both groups received fentanyl 1-2 microgram/kg	GROUP I Induction 2.5 mg/kg propofol Maintenance 2.5 mg/kg propofol GROUP II Induction 0.15 mg/kg midazolam Maintenance 0.18 mg/kg/h midazolam

ADVANTAGES OF TIVA OVER TRADITIONAL ANAESTHESIA

1. The precision vaporizers are unnecessary. Currently used vaporizers have no mechanism to prevent drug delivery of lethal concentrations of anaesthetics to patients; thus, a separate gas-analysis monitor is necessary to determine the concentration of volatile agent delivered from the vaporizer.
2. There is no atmospheric pollution by trace concentrations of nitrous oxide or volatile anaesthetic agents which are not cleared from the blood till next day morning. Although the evidence is unclear or controversial, inhalation of these gases may cause (a) subacute combined degeneration of the cord (b) bone marrow depression, (b) an increase incidence of miscarriages in pregnant operating room personnel (c) female children born to the wives of male anaesthesiologists. (d) a decrease in the alertness of the anaesthesiologist
3. The components of TIVA can be regulated independently as per need of the surgery. Both somatic and autonomic responses to varying degrees of surgical stimulation can be controlled.

RESULTS AND OBSERVATIONS

Combination of propofol and ketamine provides better haemodynamic stability throughout the procedure, when compared to propofol fentanyl. Demographics, duration of surgery, and anesthesia were similar between the two groups. Both groups received similar propofol doses. There were no difference in BIS values preoperatively (mean, 96), intraoperatively (mean, 55), and postoperatively (mean, 96). Recovery of BIS and times

for verbal response did not differ. At 20, 30, and 40 min after terminating the opioid infusion, the peripheral oxygen saturation and respiratory rate were significantly higher in the fentanyl group compared with ketamine group. In group C. induction and recovery time, blood concentration and adverse effects were monitored. Mean Induction time was significantly shorter in the propofol group. Mean recovery time was significantly faster with propofol (12.3 min) compared to midazolam (20.4 min).

Blood concentrations during anaesthesia were 3.1 mcg/ml propofol and 295.3 mcg/ml midazolam. Blood concentrations during recovery were 1.8 mcg/ml propofol and 78.2 mcg/ml midazolam. Adverse effects reported were apnoea 29. 2% midazolam vs 14% propofol and spontaneous movement in 21% of propofol patients. Blood pressure decreased in both groups, but was significantly greater with propofol (21.4%) vs midazolam (8.2%).

Parameters	Propofol ketamine	Propofol Fentanyl	Propofol VS Midazolam
Heart rate/min	More stable	Less stable	Group I Induction and recovery rapid but heart rate increased vs Group II
Mean arterial pressure	More stable	Less stable	Group I – Decreased vs Group II
Bispectral index	Less than 60%	Less than 60%	Less than 60%
O2 saturation	Unstable	Maintained	Group I = Maintained vs group II
Respiratory rate	Unstable	Maintained	Group I = Maintained vs group II
Discharge readiness	Late	Early	Group I - Early VS, Group II

CONCLUSION

The conclusion drawn from this study is that, the combination of propofol and ketamine gives better haemodynamic stability during induction and maintenance of total intravenous anaesthesia for short surgical procedures. When both the hypnotic and analgesic components of a TIVA-based anesthetic are administered in equipotent doses, fentanyl. provides a more rapid respiratory recovery, even after brief surgical procedures, compared with ketamine. Both propofol and midazolam are safe and effective for TIVA in children. Recovery was faster and more comfortable following propofol.

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