ORIGINAL ARTICLE

COMPARISON OF HAEMODYNAMIC FLUCTUATION OF INTRAVENOUS KETAMINE WITH INTRAVENOUS PROPOFOL – FENTANYL COMBINATION IN SHORT SURGICAL PROCEDURE

Madhavi S Mavani, Sudevi Desai

Author's Affiliations: Assistant Professor, Department of Anaesthesia, GCS Medical College, Ahmedabad
Correspondence: Dr Madhavi S Mavani E-mail: drmadhavimavani@gmail.com

ABSTRACT

Background: An increasing interest in intravenous anesthetic agent has resulted from the availability of more effective intravenous agents.

Objectives: Comparison of intravenous Ketamine with combination of intravenous Propofol and Fentanyl in ASA Gr. 1 patients of middle age in minor surgical procedures, To compare the haemodynamic fluctuation of intravenous Ketamine with intravenous propofol – fentanyl combination in short surgical procedure and to compare recovery and side-effective in postoperative period of intravenous Ketamine with intravenous propofol- Fentanyl combination in short surgical procedures.

Methodology: This observational study includes 20 patients of ASA Grade I of either sex, especially those who were coming for minor surgery. Patients divided in group A**:** Patients were preoxygenated with 100% oxygen. Induction was done with injection Ketamine 2 mg/kg intravenous. O_2 was given throughout surgery and group B: Patients were preoxygenated with 100% oxygen. Induction was done with inj. Fentanyl citrate I μg/kg over 1 minute followed after 3 minute by propofol 2.5 mg/kg O_2 was given throughout surgery.

Results: Highest patients belong to 21-30 years age group. Female were higher in both the group that male. Most of (18) patients belongs to 51 to 40 kg group. Falling in blood pressure and pulse was more in Group B than Group A patients. Post-operative side effects more seen Group A than Group B patients.

Conclusion: Inspite of more side effects and more change in hemodynamics parameters in Propofol-fentanyl group than Ketamine group, Both Ketamine and Propofol–fentanyl combinations produce rapid, pleasant and safe anesthesia with only a few untoward side effects and only minor hemodynamic effects.

Key word: Ketamine, Propofol, Fentany, Minor Surgical Procedures, Haemodynamic Fluctuation

INTRODUCTION

An increasing interest in intravenous anaesthtic agent has resulted from the availability of more effective intravenous agents. Ketamine[1-5] has intrinsic analgesic and amnestic properties, protects airway reflexes, and can be administered by multiple routes of administration. However, it has the potential for undersirable side effects that include unpleasant emergence sequelae, hallucinations and emesis[6] Ketamine is alos relatively contraindicated in patients with hypertension, inceased intracranial pressure, respiratory tract infection, or underlying neurosychiatric condition such as sezures or psychoses.[7]

Propofol is an intravenous (IV) sedative-hypnotic agent with amnesic properties that causes loss of consciousness reliably and rapidly. It is structurally unrelated to other hypnotics such as barbiturates and benzodiazepines and represent a new class of sedative hypnotics called diisopropyphenol. It has been shown to have a synergistic hypnotic effect when used in conjunction with other classes of analgesic/ sedative agents as barbiturates, benzodiazepines, opioids, and Ketamine[8-10]. So this study was conducted with the objectives of to comparison of intravenous Ketamine with combination of intravenous Propofol and Fentanyl in Americal Society of Anesthesiologist (ASA) Gr. 1 patients of middle age in minor surgical procedures, To compare the haemodynamic fluctuation of intravenous Ketamine with intravenous propofol – fentany combination in short surgical procedure, To compare recovery and side-effective in postoperative period of intravenous Ketamine with intravenous preopofol- fentranyl combination in short surgical procedures.

METHODOLOGY

The study includes 20 patients of ASA Grade I of either sex, especially those coming for minor surgery.

Selection of Patients: Patients scheduled for minor surgical procedures were selected. Exclusion Criteria:

Patients below 20 years of age, pregnant women, lactating mothers, patients with a history of epilepsy or any convulsive disorder, psychosis, hypertension, major cardiac problems, those with a known allergy to these drugs.

Pre-anesthetic Check Up: A pre-anesthetic check up was done including detailed history and physical examination, Baseline measurements of pulse, systolic and diastolic blood pressure, respiratory rate and body weight, routine investigations. The proposed anesthetic technique and induction procedure were explained to the patient. After obtaining their consent they were advised overnight fasting as with routine anesthesia.

Premedication: Patients divided in Group A and Group B**. In Group A:** Patients were preoxygenated with 100% oxygen. Induction was done with injection Ketamine 2 mg/kg intravenous. O_2 was given throughout surgery. **In Group B:** Patients were preoxygenated with 100% oxygen. Induction was done with inj. Fentanyl citrate I μg/kg over 1 minute followed after 3 minute by propofol 2.5 mg/kg O_2 was given throughout surgery. Injection glycopyrrolate 0.2 mg i.v. and injection Midazolam 1 mg i.v was given to all patients in group A and B 5 minutes before induction of anaesthesia. Injection xylocard 2% 2 CC.I. given 1 minute before inj. Propofol to reduce pain during propofol injection.

Induction: Patients to be operated were reexamined for pulse, blood pressure find and consent checked prior to commencement of anaesthesia I.V line was secured. Findings were duly recorded in Performa. ECG monitor and pulse oximetry were attached.

Maintenance of Anaesthesia: Pulse rate, blood pressure and respiratory rate were recorded every five minutes throughout the operative procedures. Other parameter noted were involuntary movements, hypertonicity, lacrimation, salivatin, nausea and vomiting. At the end of operation, duration of surgery, duration of anaesthesia and type of supplementation needed was noted in proforma.

Postoperatively: Upto 12 hours level of consciousness and vital signs were monitored. Incidence of nausea, vomiting, delirium and presence of hypertonic reflexes were observed and tabulated. 12 hours follow up was done for any memory of preoperative, intra operative and immediate postoperative events, incidence of nausea, vomiting. Dizziness, blurred vision and irrational behavior were noted.

RESULTS

Highest patients belong to 21-30 years age group (table 1). Female were higher in both the group that male and higher patients belongs to 51 to 40 kg group. Group A have comparatively more significant change that group B regarding pulse and blood pressure. In Group A, Abut 60% patients showed rise in pulse rate upto 10/min while 40% showed rise in pulse rate of more than 10/min and in group B, 10% patients had a rise in pulse rate upto 10/min while 90% patients has a fall in pulse rate upto 10/min. 20% patients had a rise in B.P. upto 10 mm Hg. In group B, 10% patients had a significant (<0.05) rise in pulse rate upto 10/min while 90% patients has a fall in pulse rate upto 10/min. Almost 20% patients had a significant (<0.05) rise in B.P. upto 10 mm Hg while 80% had a fall in B.P. upto 10 mmHg.

Table 1: Socio-demographic characteristics and clinical parameters of Participants (N= 40)

Variable	Group A	Group B	P value*
Age			
21-30 years	9	8	0.68
31-40 years	6	4	
45-50 years	5	7	
Gender			
Male	9	7	0.74**
Female	11	13	
Weight (kg)			
31-40	3	2	0.78
41-50	9	8	
51-60	8	10	
Type of surgery			
STG	8	9	0.85
Dressing	5	3	
Incision and Drainage	5	5	
Dilation and Evacuation	2	3	
Duration of Surgical Intervention (minutes)			
Up to 10	6	4	0.7
10 to 20	8	8	
20 to 30	6	8	
Total Dose (mg)			
100-150	9	2	0.0001
150-200	11	4	
200-250	0	7	
250-300	0	7	
Post- operative change in Pulse (per minute)			
Rise (0-10)	12	2	0.0001
Rise (>10)	8	2	
Fall (0-10)	0	18	
Post- operative change in Pulse (mmhg)			
Rise (0-10)	7	4	0.0001
Rise (>10)	13	0	
Fall (0-10)	0	16	
Incidence of post-operative side effects			
Salivation	4	0	0.34
Nausea	4	2	
Delirium	2	0	
Hyper-tonicity	1	0	
Hallucination	5	0	

Group A -Ketamine Group) & Group B-Propofol Fentanyl)
* Chi-square test ** Fisher's Exact test

Post-operative side effects were more in group A than group B but change was non-significant. Propofol – Fentanyl combination is more suitable in minor surgical procedures because of Stable hemodynamics, Less post operative nausea and vomiting, Rapid recovery, Less postoperative psychomotor disturbances.

DISCUSSION & CONCLUSION

The present study compares the effect of i.v. Ketamine with i.v. Propofol –F Fentanyl combination for minor surgincal procedure. A total of 40 patients were divided in 2 groups of 20 patients each with group A receiving inj. Ketamine and grop B receiving Inj. Propofol – Fentanyl combination. The advantages of a Propofol - Fentanyl combination are :- i) Rapid onset of action. ii) Short duration of action. iii) Easily controllable. iv) No significant accumulation. **Effect on blood pressure & Pulse :** Study was found that after i.v. Ketamine, there was an increase in pulse rate and blood pressure. This findings are consistent with the findings of study fone by Suri YV (1982)[9] & Virtue Alanis (1967)[10] which was found that the effect of Ketamine infusion increase the pulse rate, blood pressure. Study was found that after i.v. Propofol , there was an decrease in pulse rate and blood pressure**.** This finding are consistent with study done by Thomas JE et.al. 1992[11] who had also observed larger decline in blood pressure (almost 8 mmhg in systolic and 4 mmhg in diastolic blood pressure). Similar findings had also observed by Sukhminder JSB et.al 2010[12], Mayor M et.al 1990[13], Mi WD et.al. 1998[14], Billard V. et.al. 1994[15]. **Side effects : G**roup A had much more incidence of side effects compared to group B. In group A 20% patients had increased salivation, 20% patients had nausea, 5% patients had hypertonicity, 10% patients had delirium and 25% patients had hallucinations. This finding are almost consistent with study done by Ghabash M. et.al. 1996[16]. Inspite of more side effect and more change in hemodynamics parameters in Propofol-fentanyl group than Ketamine group, Both Ketamine and Propofol–fentanyl combinations produce rapid, pleasant and safe anesthesia with only a few untoward side effects and only minor hemodynamic effects.

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