



Anesthesiology

COMPARISON OF COMPLICATIONS OCCURRED BETWEEN KETAMINE- PROPOFOL AND FENTANYL – PROPOFOL GROUP FOR SHORT SURGICAL PROCEDURES

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ABSTRACT **Objective:** To compare the complication occurred among the patients scheduled for short surgical procedures in ketamine-propofol and fentanyl – propofol groups

Methods: In this prospective study, hundred consenting patients undergoing short elective surgeries were randomly allocated into two groups of fifty each: group PF received propofol 2 mg/kg + fentanyl 2 µg/kg for induction and propofol 4 mg/kg/hr + fentanyl 1 µg/kg/hr for maintenance of anaesthesia and group PK received propofol 2mg/kg + ketamine 1mg/kg for induction and propofol 4mg/kg/hr + ketamine 1 mg/kg/hr for maintenance of anaesthesia. Hemodynamic variables were recorded pre, intra and postoperatively at regular intervals. At the end of drug infusion(s), time to spontaneous eye opening and response to postoperative questionnaire was noted to assess recovery.

Results: Patients in both groups did not differ significantly in complication. Time to spontaneous eye opening was similarly comparable in both the groups. Response to postoperative questionnaire at 30 minutes after anaesthesia was good in both the groups. Incidence of postoperative nausea and vomiting was also statistically insignificant between both the groups.

Conclusion: Ketamine and fentanyl with propofol infusion for short surgical procedures are equally safe and efficacious. and good recovery profile were noted

KEYWORDS : ketamine, propofol, fentanyl

INTRODUCTION:

Propofol's pharmacokinetic profiles favour administration by continuous intravenous infusion^{4,5}. As Propofol has very little nociceptive effect, it is generally combined with an analgesic, the popular combination being either Propofol with Fentanyl or Propofol with Ketamine. Pain relief to patient is an important constituent of balanced anaesthesia. Ketamine is a potent analgesic, its anaesthetic and analgesic effects have been suggested to be mediated by different mechanisms. It has very high margin of safety, no irritation of the veins and no negative influence on ventilation or circulation. Its main disadvantages are that it produces hypertension and precipitates psychomimetic emergence phenomena³. Fentanyl on other hand is the most frequently used opioid in clinical anaesthesia today. Its disadvantage is its negative influence on ventilation and postoperative nausea and vomiting. One of the main drawbacks with Ketamine anaesthesia has been emergence delirium, which Propofol seems to be effective in eliminating. In this study, the combination of Propofol-Ketamine was compared to the combination Propofol- Fentanyl in patients undergoing general anaesthesia for short elective surgeries. Haemodynamic variables, the time to recovery and patient acceptability were compared.

IMATERIALAND METHODS

After obtaining approval from ethics committee and well informed written consent, a double-blind randomized study was conducted on 100 patients of ASA grade I and II (15 to 60 years) of either sex, scheduled for short surgical procedures

PK (n=50)	Ketamine - propofol group
PF (n=50)	Fentanyl - propofol group

All patients undergo for minimum investigation as required in individual cases viz. haemogram, blood sugar, blood urea, urine for routine and microscopic examination, ECG, x-ray chest if needed. All patients were kept nil orally for 8 hours before scheduled surgery. All patients were premedicated with injection glycopyrolate 0.01 mg/kg body weight intramuscularly (IM) 30 minutes before shifting to Operation room(OR). Upon arrival of the patient in the operation room, Intravenous access with two 20 G cannula was established. 500 ml of crystalloid(Ringer lactate) solution started from one intravenous cannula. Electrocardiogram (ECG) leads noninvasive arterial blood pressure (NIBP), pulse oximeter were applied.

Table No. 2 : DISTRIBUTION OF VARIOUS SURGERIES AMONG TWO GROUPS

Nature of surgery	Group PK (n=50)		Group PF(n=50)	
	No.	%	No.	%
Suction & evacuation	13	26	10	20
Closed fracture reduction	11	22	05	10
Fibroadenoma excision	13	26	10	20
Lipoma excision	01	02	03	06
Cyst removal	01	02	06	12
Incision & drainage	06	12	09	18
Diagnostic laparoscopy	02	04	01	02
Septoplasty	01	02	02	04
Tattoo Removal	01	02	02	04
Manual removal of placenta	01	02	02	04
Total	50	100	50	100

All the drugs ketamine, propofol and fentanyl were administered by a person not involved in the study to avoid bias. Drugs were given by Intravenous route (I/V) for induction of anaesthesia and by infusion pump for maintenance of anaesthesia. Group PK (n=50) received propofol 2 mg/kg + Ketamine 1 mg/kg for induction and propofol 4 mg/kg/hr + ketamine 1 mg/kg/hr for maintenance of anaesthesia. Group PF (n=50) received propofol 2 mg/kg + Fentanyl 2 g/kg for induction and propofol 4 mg/kg/hr + Fentanyl 1 g/kg/hr for maintenance of anaesthesia. All baseline haemodynamic parameters HR, SBP, DBP, SPO₂ were recorded before induction and after induction. The incidence of postoperative nausea and vomiting (PONV) hallucinations, Hypertension, hypotension, tachycardia, bradycardia, chest wall rigidity, nystagmus, myoclonic movements were monitored and were managed accordingly recovery profile was assessed. Patient's satisfaction was assessed using a 100-mm visual analog scale (VAS) (0 =least satisfied, 100 = most satisfied). The patients rated their satisfaction by making a vertical mark on the 100-mm line. Only patients with score ≥75 were considered satisfied. The exact question was "Are you satisfied with your sedation?" The following questions were asked after 30 minutes of surgery

- What is your name?
- Where do you live?
- What is date today?
- What is present time?

- Are you having pain?

Obtained data were tabulated and subjected to statistical analysis like student's t-test and chi-square test by spss-17 software. p-value >0.05 was taken to be statistically insignificant and p-value <0.05 taken statistically significant.

RESULTS

Demographic Data among both the groups were comparable for mean age, weight and sex ratio. P value (≥ 0.05) is non-significant.(Table no.1)

Table no.1 Demographic Profile

Values of pulse rate are shown as (mean ± SD). P Value ≥ 0.05 is not significant there was no statistically significant change in pulse rate perioperatively (Table no. 2)

Table no.2 : Comparison of change in pulse rate

Changes in systolic blood pressure (mmHg). Value are shown as (mean ± SD). At basal level there was no significant difference statistically. There was statistically significant fall in systolic blood pressure after induction in Propofol - Fentanyl group. P value is 0.0001 is highly significant. After starting the infusion systolic blood pressure did not show any significant difference.(Table no.3)

Changes diastolic blood pressure (mmHg). Value are shown as (mean ± SD). At basal level there was no significant difference statistically. It was observed that mean diastolic blood pressure before induction were (77.88±7.04) mm Hg and (78.72 ± 3.87) mm Hg in PK and PF group respectively. After induction DBP did not show any significant difference in both the groups. P value ≥0.05 is non significant.(Table no.4)

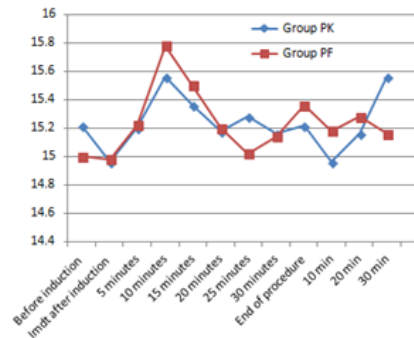
There is no statistically significant difference in SpO₂ (%) among both groups during various stages of surgical procedure. P value is ≥0.05 statistically insignificant(graph 2)

Table 8 : COMPARISON OF COMPLICATIONS OCCURRED IN BOTH GROUPS

S NO.	Complication	PK Group (n=50)		PF Group (n=50)	
		No	%	No	%
1	PONV	06	12	05	10
2	Hallucination	04	08	00	00
3	Hypertension	00	00	00	00
4	Hypotension	00	00	04*	08*
5	Bradycardia	00	00	00	00
6	Trachycardia	01	02	02	04
7	Chest wall rigidity	00	00	00	00
8	Nystagmus	00	00	00	00
9	Myoclonic movements	00	0	00	00
10	Patient satisfaction	45	90	48	96

Table No.-8: Showing the comparison of complication occurred at various stages during surgery and after recovery in both groups. Postoperative nausea and vomiting was reported in 6 patients in PK group and 5 in PF group. There is no statistically significant difference in both groups. Hypotension was reported in 4 patients of PF group and non in PK group.

Table 9 : COMPARISON OF RECOVERY PROFILE BETWEEN PK AND PF GROUP



Graph 12- COMPARISON OF RECOVERY PROFILE BETWEEN PK AND PF GROUP

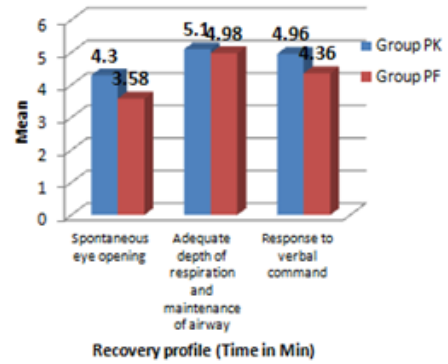


Table No.-9: Showing the comparisons of recovery profile between two groups. P value is (p≥0.05) insignificant.

DISCUSSION

The findings of this study indicate that there was no statistically significant difference among both groups (PK and PF) regarding haemodynamic variability, recovery profile and side effects. R. Mahajan et al¹ also observed no significant haemodynamic changes among both groups. Similar results were obtained from other studies^{5,7,9,10,13}.

There was a decrease in mean SBP (119.08 ± 4.10) and (114.62 ± 6.47) in PK and PF group respectively immediately after induction. Later (mean ± SD) SBP remained stable among both groups at 5, 10, 15, 20, 25 min and at the end of procedure. On applying statistical test for intergroup comparison the difference in SBP was highly significant immediately after induction in PF group compared to PK group (P=0.0001) because propofol and fentanyl had been given IV bolus. Propofol causes hypotension due to its vagotonic effect and fentanyl inhibit baroreceptor reflex. After starting of infusion difference in SBP at different time interval was statistically insignificant (P≥0.05). Bajwa S.J.S. et al² observed that ketamine-propofol provide better control of SBP as compare to propofol-fentanyl. significant fall in SBP in PF group after induction (P≤0.05) while there was mild increase in SBP in PK group which is statistically insignificant (P≥0.05). Their findings are well in accordance with our study. Similar results were obtained from other studies^{1,5,7,9,10,14,15}.

Vallejo M.C. et al⁵ also observed no statistically significant in their study. Similar results were obtained from other studies^{7,10,11}.

There was no change mean respiratory rate in both groups immediately after the induction. After starting the infusion no significant (P≤0.05) changes have been observed in mean RR at 5, 10, 15, 20, 25 min and at the end of procedure in PK and PF group respectively. On applying statistical test for intergroup comparison the difference in RR between both groups at different time interval was statistically insignificant (P≥0.05). R. Mahajan et al¹ also observed no statistically significant (P≥0.05) difference with respect to Respiratory rate among both group. Similar results were obtained from other studies^{5,9,10,12}.

CONCLUSION

Following conclusions are drawn from the present study:-

- Ketamine and fentanyl in propofol infusion for short surgical procedure are equally safe and efficacious.
- Infusion of propofol- ketamine and propofol-fentanyl both provide stable haemodynamics and good recovery profile.
- Patient satisfaction is good among the both groups with no significant adverse effects.

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