



COMPARATIVE STUDY OF PROPOFOL-KETAMINE VS KETAMINE FOR TIVA IN DAY CARE SURGERIES

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ABSTRACT

There is an ongoing quest to know which agent is better for outpatient day care surgeries. The main aim of present study was to compare the effects of combination of Ketamine and Propofol as anaesthetic agent as against plain ketamine with respect to change in heart rate, blood pressure, oxygen saturation, total dose required, emergence phenomenon and total recovery time.

Materials and Methods: In this hospital based comparative study, 60 patients of ASA I & II scheduled for day care surgeries were taken. Patients were divided into two equal groups.

Group A: Induction was done with injection ketamine 1 mg/kg and Propofol 2.5 mg/kg intravenously and maintained on propofol infusion of 6 mg/kg/hr till end of surgery.

Group B: Induction was done with injection Ketamine 2 mg/kg intravenously and maintained on ketamine infusion of 40 mcg/kg/min till end of surgery.

In both the groups pulse rate, systolic, diastolic and mean blood pressure, oxygen saturation were measured along with emergence phenomenon and recovery. Data obtained was compared using statistical package of SPSS – 20.

RESULT: The effect of Propofol – ketamine combination and ketamine were observed with respect to haemodynamic stability, changes in oxygen saturation and respiratory rate, total dose of drug required incidence of emergence phenomenon and other side effect. Post operatively along with recovery time, pulse rate and blood pressure increased in both the groups immediately following induction but were insignificant. Intra – op rise in pulse rate and blood pressure were significant with rise in Group B more than in Group A. There was not much change observed in respiratory rate and oxygen saturation and was statistically insignificant. In Group B, number of patients with side effects like emergence phenomenon and lacrimation were significantly higher in Group A. The average dose of ketamine required was around 51.63mg/procedure in group A as against 137 mg/procedure in group B.

On comparing the recovery between the two groups it was seen that on an average patients were able to respond to verbal commands at 20.93 minutes in Group A as against 31.30 minutes in Group B, they were able to sit without support at 35.83 minutes in group A and 66.20 minutes in group B, and they were able to walk in straight line with Rhombert's test steady at 52.23 minutes in group A and 105.7 minutes in group B. Application of appropriate statistical tests showed that these values were statistically significant.

CONCLUSION: we can conclude that Propofol – Ketamine combination has several advantages over Ketamine alone when used in day care surgery like

1. Reduced drug requirement of Ketamine
2. Maintenance of hemodynamic stability intraoperatively
3. Maintenance of spontaneous natural airway breathing during anaesthesia
4. Lower incidence of intraoperative apnoea
5. Greater propensity to minimize the intensity of emergence reactions of Ketamine and
6. Shorter recovery times as compared to Ketamine alone

KEYWORDS : Propofol, Ketamine, Day care surgery, Total intravenous anaesthesia

INTRODUCTION

There is an ongoing quest to know which agent is the best for induction is as well as maintenance of anaesthesia for day care surgeries.

In the present scenario where, major part of elective operations can be performed on day care basis, ambulatory anaesthesia has come a long way while providing benefits like:

- Cost reduction benefit to the patient
- Less disruption of patient and relative's personal life with a more rapid return to daily activity
- Lower percentage of cancellation of surgery as compared to inpatient surgeries
- Reduced risk of wound infection, deep vein thrombosis, pulmonary embolism, pneumonia etc.

The ideal anaesthetic for outpatient procedure should produce a rapid, smooth induction intra-operative amnesia, analgesia with good surgical conditions and short recovery period free of side effects.

Ketamine has analgesia and dissociative anaesthetic properties profound whereas intravenous propofol produce rapid induction and quick recovery.

The present study was undertaken to compare combination of propofol-ketamine as against plain ketamine for induction and maintenance of anaesthesia in short surgical procedure and quick recovery and is currently a popular induction agent for surgical anaesthesia.

The main objective of the study undertaken was, to use the beneficial effects of the combination of two intravenous anaesthetics in short surgical procedures so as to benefit the patient by rapid recovery and an early resumption of his normal routine activities.

For different intravenous anaesthetic agents being used in day care surgery, they require to have the properties of an ideal agent (R.J. MILLER)

The introduction of ketamine hydrochloride appears to be very promising. It has analgesic, anaesthetic, sympathomimetic

and cerebral dissociative action.

So, the aim of present study was to compare the effects of combination of ketamine and propofol as anaesthetic agents, as against plain ketamine in patients undergoing short surgical procedures of 10-30 minutes duration.

These comparisons were made with respect to the following parameters:

- Change in heart rate
- Change in blood pressure
- Change in oxygen saturation and respiratory rate
- Total doses of drug required
- Incidence of emergence phenomenon postoperatively
- Total recovery time

MATERIALS AND METHODS

In this hospital based prospective comparative study, 60 patients all whom were between age of 18 to 60 years, with no systemic diseases and were of both sexes with ASA I & II were scheduled for elective short surgical procedures.

This is study of comparison between propofol-ketamine combination as against only ketamine for induction and maintenance of total intravenous anaesthesia in patients of physical status ASA grade I & II undergoing short surgical procedures of 10 to 30 minutes duration.

After obtaining the consent from institutional ethical committee and written informed valid consent.

These patients were divided in to two groups of 30 each:

Inclusion criteria

- Age group 18 to 60 years
- ASA grade I & II
- Elective short surgeries- requiring general anaesthesia with laryngeal mask airway placement e.g. fibroadenoma, hernia, fistula, appendicitis.

Exclusion criteria

- Allergy to propofol/ Egg allergy
- History of upper respiratory tract infection within one month of surgery
- Documented uncontrolled hypertension/ chronic obstructive pulmonary disease
- Addiction to alcohol/ drug abuse

Preoperative preparations and examination

All patients were assessed preoperatively. Routine blood investigation like CBC, RBS, ECG, XRC were done for patients >40 years of age. Type of anaesthesia and recovery characteristics were explained to the patients in language best understood by them too allay anxiety and apprehension.

Complete clinical examination of the patient was done including vitals like pulse, systolic blood pressure, diastolic blood pressure, SpO₂, examination of cardio-respiratory system, central nervous system.

Anaesthesia technique

Patients were taken to the operation theatre after confirming NBM status and written informed valid consent were checked. Following preloading with ringer's lactate 5-8ml/kg and premedication with Glycopyrrolate 0.004mg/kg, Fortwin 0.5mg/kg and Midazolam 0.05mg/kg anaesthesia was induced with-

In group A, induction was done with injection ketamine 1mg/kg and followed by injection propofol 2.5mg/kg intravenously and heart rate, blood pressure, respiratory rate and oxygen saturation were monitored immediate post ketamine and post propofol injection and anaesthesia was

maintained with propofol drip at rate of 6 mg/kg/hr.

In group B, induction was done with injection ketamine 2mg/kg intravenously and the same parameters were noted and anaesthesia was maintained with ketamine drip at rate of 40mcg/kg/min.

In both groups patients were maintained on spontaneous ventilation and O₂ was supplemented.

In both groups pulse rate, systolic, diastolic and mean blood pressure, respiratory rate and oxygen saturation were measured at 0, 1, 5, 10, 15, 20 minutes and post operatively.

Duration of surgery was 10-30 minutes.

Once surgery was over patients pulse rate, systolic, diastolic and mean blood pressure, oxygen saturation and respiratory rate were recorded.

During administration, induction sequelae was observed and immediate recovery phenomenon i.e. emergence reactions like lip smacking, grimace, dreaming, hallucinations etc. were looked for.

In recovery room, before seeing response to command checked shifting awareness, spontaneous eye opening and answering simple question like name, age, orientation was done.

Statistical Analysis

Data obtained from both the groups were compared using statistical test like students test, chi square test, Fishers exact test.

RESULT

The two groups were comparable with respect to demographic characters like age, weight and ASA grades and duration of surgery (P>0.05)

Table 1: Comparison of baseline variables among study groups

Variables	Group A n=30		Group B n=30	
	Mean	SD	Mean	SD
Age	35.03	3.4	34.20	4.5
Weight (Kg)	57.63	5.7	52.10	6
Duration of surgery (min)	15	4.5	15.33	5.2

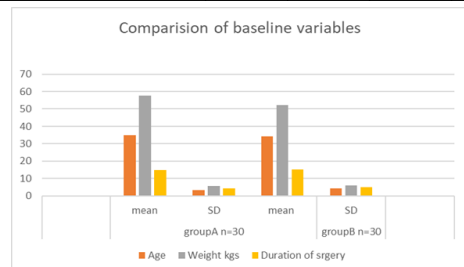
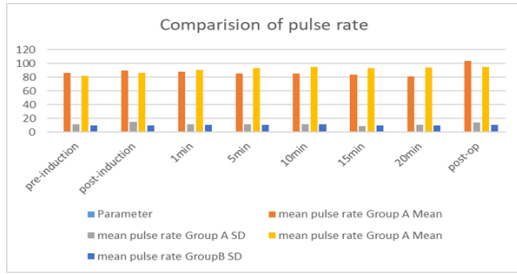


Table 2: Comparison of Pulse rate between two groups

Parameter	Mean Pulse Rate		P value	Significant
	Group A	Group B		
PRE-IND	86.6 ± 11.6	81.7 ± 9.8	0.082	Not significant
POST-IND	89.8 ± 14.6	86.3 ± 9.9	0.360	Not significant
1 min	88.1 ± 11.5	90.6 ± 10.3	0.381	Not significant
5 min	85.0 ± 11.7	93.2 ± 10.2	0.005	Significant
10min	85.0 ± 11	94.8 ± 10.9	0.001	Significant
15 min	83.88 ± 9.1	93.5 ± 9.5	0.001	Significant
20 min	81.2 ± 10.2	94.2 ± 10	0.025	Significant
POST-OP	104.1 ± 13.9	95.03 ± 10.3	0.667	Not significant

P<0.05 significant

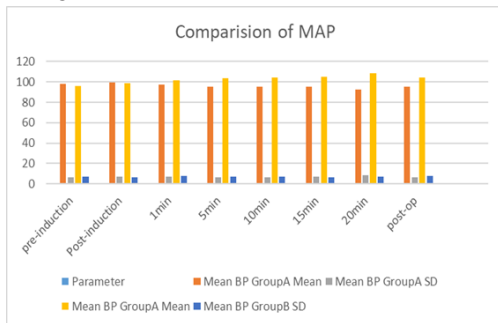


- The change in pulse rate in both groups pre-induction, immediately following induction and at 1 minute insignificant and hence comparable in both groups.
- At 5 minute the change in pulse rate in group A was from 86.6 ± 11.6bpm to 85.0 ± 11.7bpm, while in group B it was from 81.7 ± 9.8 to 93.2 ± 10.2 (P 0.005). This is statically significant.
- Similarly, the change in pulse rate at 10', 15' and 20' minutes in group A was 85.0 ± 11bpm, 83.88 ± 9.1bpm and 81.2 ± 10.2bpm respectively and in group B was 94.8 ± 10.9bpm, 93.5 ± 9.5bpm and 94.5 ± 10bpm respectively. These changes were statically significant.
- Post-operatively the pulse rate in group A was 104.1 ± 13.9 and group B was 95.03 ± 10.3 P 0.667, which were not statistically significant.

Table 3: Comparison of Mean Blood Pressure (mm of Hg.) between two groups

Parameter	Mean BP (mm of Hg.)		P Value	Significance
	Group A	Group B		
PRE-IND	98.3 ± 6.7	96.10 ± 7.3	0.229	Not significant
POST-IND	99.50 ± 7.1	99.04 ± 6.25	0.343	Not significant
1 min	97.51 ± 7.5	101.55 ± 7.6	0.043	Significant
5 min	95.52 ± 6.5	103.74 ± 7.3	0.000	Significant
10 min	95.17 ± 6.2	104.5 ± 7.4	0.000	Significant
15 min	94.97 ± 7.1	105.26 ± 6.6	0.000	Significant
20 min	92.54 ± 8.2	108.15 ± 6.9	0.001	Significant
POST-OP	95.64 ± 6.4	104.2 ± 7.7	0.000	Significant

P < 0.05 significant



- The difference in mean Blood pressure before induction in the two group of patients was statistically insignificant, and therefore comparable.
- Following induction rise in mean Blood Pressure in group A was from 98.38 ± 6.7 mm of Hg to 99.50 ± 7.1 mm of Hg. In group B it was from 96.10 ± 7.3 mm of Hg to 99.04 ± 6.25 mm of Hg (P = 0.343) this was statistically insignificant.
- At 1 minute mean BP in group A was 97.51 ± 7.5 mm of Hg in group B it was 101.55 ± 7.6 mm of Hg (P = 0.043) this was statistically significant.
- At 5 minute mean BP in group A was 95.52 ± 6.5 mm of Hg in +group B was 103.74 ± 7.3 mm of Hg (P = 0.000) this is also statistically significant.
- At 10 minute mean BP in group A was 95.17 ± 6.2 mm of Hg in group B it was 104.5 ± 7.4 mm of Hg (P = 0.000) this was statistically significant.
- At 15 minute mean BP in group A was 94.97 ± 7.1 mm of Hg in group B it was 105.26 ± 6.6 mm of Hg (P = 0.000) this was

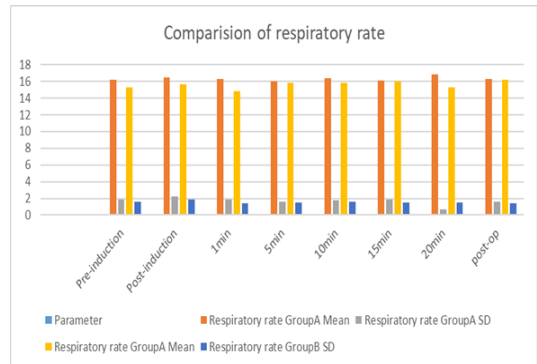
statistically significant.

- At 20 minute mean BP in group A was 92.54 ± 8.2 mm of Hg in group B it was 108.15 ± 6.6 mm of Hg (P = 0.001) this was statistically significant.
- Post-operative mean BP in group A was 95.64 ± 6.4 mm of Hg in group B it was 104.2 ± 7.7 mm of Hg (P = 0.000) this was statistically significant.

Table 4: Comparison of Respiratory Rate between two groups

Parameter	Respiratory rate		P value	Significance
	Group A	Group B		
PRE-IND	16.20 ± 1.9	15.30 ± 1.6	0.061	Not Significant
POST-IND	16.5 ± 2.2	15.7 ± 1.9	0.063	Not Significant
1 min	16.30 ± 1.9	14.86 ± 1.4	0.002	Significant
5 min	16.00 ± 1.6	15.80 ± 1.5	0.630	Not Significant
10 min	16.43 ± 1.8	15.83 ± 1.6	0.194	Not Significant
15 min	16.14 ± 1.9	16.04 ± 1.5	0.852	Not Significant
20 min	16.85 ± 0.69	15.33 ± 1.5	0.027	Significant
POST-OP	16.33 ± 1.6	16.23 ± 1.4	0.803	Not Significant

P < 0.05 significant

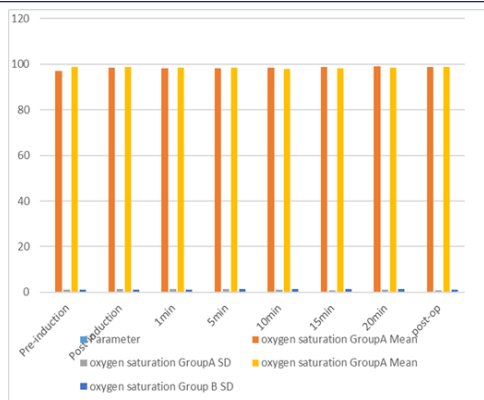


- The difference in respiratory rate in both groups before induction was statistically insignificant and therefore comparable.
- Post induction respiratory rate in group A increased from 16.20 ± 1.9 per minute to 16.5 ± 2.2 per minute and Group B from 15.3 ± 1.6 to 15.7 ± 1.9 per minute. (P = 0.063) which was insignificant.
- At 1 minute the respiratory rate in Group A was 16.30 ± 1.9 per minute in group B was 14.86 ± 1.4 per minute (P = 0.027) which was statistically significant.
- The change in respiratory rate at 5, 10 and 15 minutes were statistically insignificant and comparable.
- At 20 minute the respiratory rate in group A was 16.85 ± 0.69 per minute and in group B was 15.33 ± 1.5 per minute (P = 0.027). This was statistically significant.
- Post operatively respiratory rate in group A was 16.33 ± 1.6 per minute and in group B 16.23 ± 1.4 per minute (P = 0.803) which was insignificant.

Table 5: Comparison of Oxygen Saturation (%) between two groups

Parameter	Oxygen Saturation		P value	Significance
	Group A	Group B		
PRE-IND	96.90 ± 1.0	98.86 ± 1.0	0.904	Not Significant
POST-IND	98.56 ± 1.3	98.76 ± 1.1	0.904	Not Significant
1 min	98.30 ± 1.5	98.50 ± 1.27	0.582	Not Significant
5 min	98.13 ± 1.4	98.36 ± 1.5	0.543	Not Significant
10 min	98.56 ± 1.0	97.96 ± 1.5	0.086	Not Significant
15 min	98.71 ± 0.9	98.21 ± 1.4	0.176	Not Significant
20 min	99.00 ± 1.0	98.44 ± 1.5	0.416	Not Significant
POST-OP	98.73 ± 0.82	98.90 ± 1.2	0.537	Not Significant

P < 0.05 Significant



- Difference in the pre-operative oxygen saturation in both groups was statistically insignificant and therefore were comparable.
- Following induction there was no statistically significant difference in both groups.
- In both groups intra-operatively and post-operatively the difference in oxygen saturation was insignificant.

Table 6: Recovery (mins)

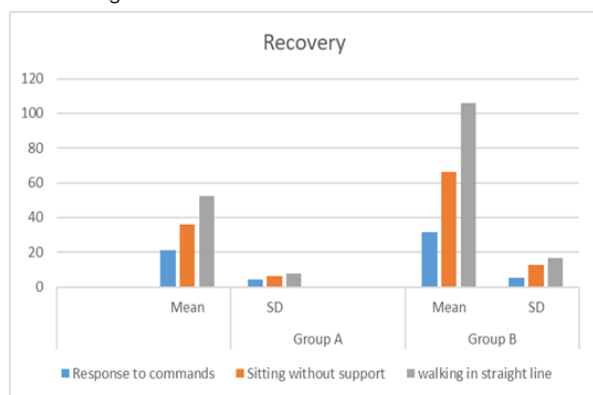
T1 – Response to verbal commands

T2 – Sitting without support

T3 – Walking in straight line, Rhomberg's test steady

Recovery In minutes	Group A	Group B	P value	Significance
T1	20.93 ± 4.3	31.30 ± 5.1	0.00	Significant
T2	35.83 ± 6.4	66.20 ± 12.5	0.00	Significant
T3	52.23 ± 7.5	105.7 ± 16.5	0.00	Significant

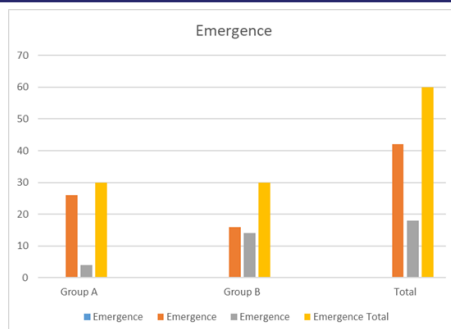
P < 0.05 significant



- In group A the time to response to verbal commands was 20.93 ± 4.3 minute following surgery while in group B it was 31.30 ± 5.1 minute following surgery (P = 0.000) which is significant.
- The time for sitting without support in group A was 31.83 ± 6.4 minute post-surgery while in group B it was 66.20 ± 12.5 minute post-surgery (P = 0.000) which was significant.
- The time for walking in a straight line and Rhomberg's test steady was 52.23 ± 7.5 minute in group A and 105.7 ± 16.5 minute in group B (P = 0.000) which was also statistically significant.

Table 7: Emergence

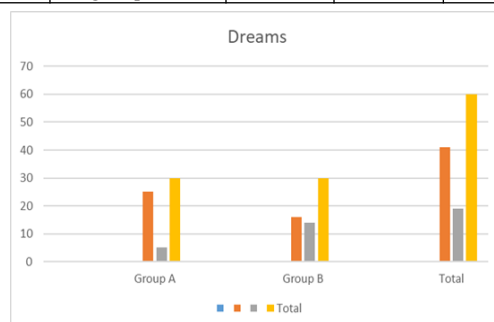
		Group A	Group B	Total
EMER	Count % within the group	26 (86.7%)	16 (53.4%)	42 (70%)
	1 count % within the group	4 (13.3%)	14 (46.7%)	18 (30%)
TOTAL	Count % within the group	30 (100%)	30 (100%)	60 (100%)



In group A the number of patient experience in emergence phenomenon was four while in group B it was 14 which was statistically significant.

Table 8: Dreams

		Group A	Group B	Total
Dreams	Count % within the group	25 (83.3%)	16 (53.4%)	41 (68.3%)
	1 count % within the group	5 (16.7%)	14 (46.7%)	19 (31.7%)
Total	Count % within the group	30 (100%)	30 (100%)	60 (100%)



In group A number of patients having dreams was 5 while in group B it was 14 which was statistically significant.

DISCUSSION

The American Society of Anaesthesiologists (ASA) endorses and supports the concept of ambulatory anaesthesia and surgery and has also setup special guidelines for the same.

Successful outpatient anaesthesia requires smooth and fast emergence with early alimentation, ambulation and alertness of patient. Reduced hospital stays, decreased wound infection, reduced costs and early resumption of an individuals' routine daily activity specially in a country like ours where daily wage earners form a bulk of our society.

General anaesthesia remains the most widely used technique for day-care surgery. In these intravenous anaesthetic agents offer advantage over inhalational agents.

The introduction of Ketamine hydrochloride has proved to be very promising but it has got many side effects, which could be attenuated by Propofol.

In a similar study conducted by T. G. Short and W. Hong⁷¹ published in 1995. There was no significant statistical difference among the three groups.

All patients in our study received inj. Glycopyrrolate 0.2mg intravenously half hour prior to induction of anaesthesia. It is preferred over Atropine as it causes less change in heart rate. Also, Ketamine causes increase in salivary secretion and hence premedication with glycopyrrolate is preferred as it is 5 times more potent as an antialogogue than atropine.

Likewise, in a study conducted by J. W. Dundee, J. W. D. Knox¹⁸ published in 1970 all patients scheduled for minor gynaecological procedures and anaesthetised with injection Ketamine were given injection Atropine 0.6 mg intramuscularly.

In our study, in both groups a baseline heart rate, systolic, diastolic and mean blood pressure along with oxygen saturation and respiratory rate were recorded. Patients were preoxygenated with 100% oxygen for 3 mins before induction.

In our study induction in group A (P+K) was done with injection Ketamine 1mg/kg followed by injection Propofol 2.5mg/kg and in group B (K) with injection Ketamine 2mg/kg. In group A anaesthesia was maintained with Propofol drip at rate 6mg/kg/hr and in group B with Ketamine drip at rate of 40mcg/kg/min.

Following induction, patients in our study were monitored for heart rate, blood pressure, oxygen saturation and respiratory rate. Following induction, there was a rise in pulse rate in both the groups. Although the rise in heart rate in group B was more than in group A it was not statistically significant.

Systolic, diastolic and, mean blood pressure was recorded in both the groups after induction. In group A systolic BP rose from 126.8 ± 10.5 mm of Hg to 129.2 ± 11.6 mm of Hg and in group B 122.0 ± 13.2 mm of Hg to 128.7 ± 13.6 mm of Hg. The diastolic pressure rose from 84.23 ± 6.7 mm of Hg to 84.7 ± 7.17 mm of Hg in group A and from 82.9 ± 11.7 to 84.7 ± 6.2 mm of Hg in group B. Similarly the mean blood pressure showed an increase from 98.38 ± 6.7 to 99.5 ± 7.1 mm of Hg in group A and from 96.1 ± 7.3 to 99.0 ± 6.25 mm of Hg in group B.

In study done by Guit J. B, Koning H. M³³ et al the heart rate and blood pressure were measured similarly after induction with Propofol and Fentanyl in Group I and Propofol – Ketamine in group II. In group I, there was a slight rise in heart rate and fall in both systolic and diastolic blood pressure as compared to group II but both these changes were insignificant.

Similarly, in a study carried out by T. G. Short⁷¹ et al the heart rate and mean arterial pressure change which were statistically significant.

In study done by Fatih Altinhas²⁴, a comparison between Ketamine + Propofol and Ketamine + Midazolam was done. The heart rate did not change during induction but blood pressure was decreased during induction which was significant.

In our study, the oxygen saturation was 98.9 ± 1 % in group A and 98.86 ± 1 % in group B before induction and which was 98.56 ± 1.3 % in group A and 98.76 ± 1.1 % in group B after induction. Both these values were insignificant as proved by statistical tests.

In our study the heart rate, blood pressure, oxygen saturation and respiratory rate were recorded at 1', 5', 10', 15' and 20' mins intraoperatively and also post-operatively.

The mean pulse rate in group A was 88.1 ± 11.5 bpm at 1', 85.0 ± 11.7 bpm at 5', 85.0 ± 11 bpm at 10', 83.88 ± 9.1 bpm at 15', 81.2 ± 10.2 bpm at 20' and 104.1 ± 13.9 bpm post-operatively while in group B it was 90.6 ± 10.3 bpm at 1', 93.2 ± 10.2 bpm at 5', 94.8 ± 10.9 bpm at 10', 93.5 ± 9.5 bpm at 15', 94.2 ± 10 bpm at 20' and 95.0 ± 10.3 bpm post-operatively. In this case values at 5', 10', 15' and 20 minutes were highly significant.

The mean blood pressure rise in group B was highly significant as compared to group A.

Similarly, in study done by T. G. Short⁷¹ et al the rise in heart rate and mean arterial pressure in patients given Ketamine alone was highly significant as compared to Propofol + Ketamine group.

In a study done by Crozier. T. A.¹³ et al comparison between TIVA by Propofol/ Ketamine and Propofol/Alfentanyl the haemodynamic stability offered by Propofol – Ketamine group was significant.

In our study, the end of surgery the patients were observed for emergence delirium on table in form of facial grimaces, rowdy behaviour and any other complications. It was seen that 4 out of 30 patients in group A (Propofol/Ketamine) had emergence delirium as against 14 out of 30 patients in group B (Ketamine) which was statistically very significant.

We also observed for other side effects like dreaming, lacrimation, headache, nausea, vomiting etc in both groups. The incidence of dreaming in group A (P/K) was 5 in 30 patients while in group B (K) it was 14 in 30 patients which was statistically significant. The incidence of lacrimation in group A was 5 in 30 patients while in group B it was 8 in 30 patients, which was statistically insignificant. The incidence of other side effects in both the groups was also insignificant.

Friedberg B L²⁷ et al in his study of Propofol + Ketamine also observed a reduced incidence of hallucinations in group as compared to Ketamine.

Guit³³ et al in their study also observed that although the recovery with Propofol – Ketamine combination was slow as against Propofol – Fentanyl, the post-operative behaviour was normal in all patients and no patients reported dreaming during or after the operation. Propofol therefore seems to be effective in eliminating the side effects of sub anaesthetic doses of Ketamine in humans.

Friedberg B L²⁶ et al in his study of procedures using Propofol and an Opioid as against Propofol – Ketamine combination found a very significantly low percentage of post-operative nausea and vomiting in Propofol – Ketamine combination group.

In our study the recovery characteristics were determined by: Time taken for awakening from anaesthesia was noted in both the groups. This was calculated from end of surgery till response to oral commands and orientation and was labelled as T1. In our study T1 in group A was 20.93 ± 4.3 minutes and 31.30 ± 5.1 minutes in group B. This showed that patients in group A recovered faster from anaesthesia and the values were highly significant. T2 was calculated as ability to sit without support and showed the time at which the patient could be left unattended. T2 in group A was 35.83 ± 6.4 minutes and in group B was 66.20 ± 12.5 minutes. This was statistically highly significant. T3 was calculated as the time when patient could walk on straight line without assistance and were steady during Rhombberg's test. T3 in our study was 52.23 ± 7.5 minutes in group A and 105.7 ± 16.5 un group B. This value was again highly significant.

Guit³³ et al in his study found that Propofol was able to eliminate the side effects of Ketamine, the recovery and awakening was 22 ± 2.3 minutes in Propofol – Ketamine group (P+K) as against 9 ± 1.0 minutes in Propofol – Fentanyl group (P+F) which was significant. However, 100% of patients in P+K group judged anaesthesia to be group as against 89% in P+F group.

Faith A²⁴ et al while studying the combination of Ketamine + Propofol (PK) against Ketamine + Midazolam (MK) found that in PK group the recovery period were shorter when compared

to MK group. ($P < 0.05$).

Frey K25 et al studying comparison of propofol vs Propofol+ Ketamine for sedation in ophthalmic surgeries concluded that addition of Ketamine to Propofol decreases the requirement of Propofol & improved the quality of sedation without prolonging the recovery.

Thus in our study we found that –

1. Dose requirement of Ketamine in group A is far less than in group B & is statistically very significant.
2. Haemodynamic stability is profoundly better in group A as compared to group B throughout the surgery & is statistically significant.
3. Respiratory rate & oxygen saturation in both the groups were maintained within baseline limits & statistically insignificant,
4. Emergence delirium, post-operative psychological reactions were far less in group A as compared to group B & were statistically significant.
5. Other side-effects like lacrimation, headache, nausea-vomiting were less in both the groups & statistically insignificant.
6. Lastly recovery scores were much better in group A & were significant statistically.

The study showed that Propofol- Ketamine combination allows the patient to maintain spontaneous respiration during total intravenous anaesthesia & its anaesthetic-analgesic effects are satisfactory, without any side-effects with good recovery as compared to Ketamine alone or day care surgeries.

SUMMARY

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