



ORIGINAL RESEARCH PAPER

Anaesthesiology

COMPARATIVE STUDY BETWEEN PROPOFOL WITH NALBUPHINE AND ETOMIDATE WITH NALBUPHINE IN MAJOR SURGERIES UNDER GENERAL ANESTHESIA

KEY WORDS: Etomidate, General Anesthesia, Nalbuphine, Propofol

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ABSTRACT

INTRODUCTION: Propofol provides rapid and smooth anesthesia with quick recovery and less incidence of vomiting. Etomidate is inducing agent of choice in cardiac patients. We are comparing the effects of these drugs when given along with nalbuphine. This study aims to compare the hemodynamic parameters, onset and efficacy of these combinations and adverse effects.

MATERIALS AND METHOD: 60 patients belonging to ASA I-II of either sex undergoing major surgeries under general anesthesia were included in our study. The study was prospective observational study, 60 patients were randomized equal into two groups to receive either propofol with nalbuphine or etomidate with nalbuphine.

RESULT: Etomidate group showed more hemodynamic stability compared to Propofol group.

INTRODUCTION:

We have various induction agents which are safe and rapid. Propofol, 2, 6-diisopropylphenol is most popular induction agent and provides rapid and smooth anesthesia with quick recovery. The incidence of vomiting is also less¹. Propofol causes dose dependent depression of ventilation and pain on injection.

Etomidate was introduced in 1972. It is a carboxylated imidazole that is characterized by its hemodynamic stability. It is the inducing agent of choice in cardiac patients as it does not exert any effect on sympathetic nervous system and increases coronary perfusion².

There are lot of studies that compare etomidate and propofol but results vary, here in this study we are comparing the effects of these drugs when it is given along with nalbuphine.

This study aims to attempt to compare the hemodynamic parameters onset and efficacy of these combinations and adverse effects.

The onset of action of propofol is around 45 sec, that is one arm brain circulation time and last for 3-5 min. Decrease in action of propofol is by redistribution to fat and muscles³.

Etomidate onset of action is around 1 min and last for 5-15 min. Many studies have considered etomidate as an effective and reliable sedation option with minimal side effects⁴.

MATERIAL AND METHODS:

After approval from institutional ethical and scientific committee and after written and fully informed consent of 60 patients belonging to ASA grade I and II of either sex undergoing major surgeries under general anesthesia were included in our study. The study was prospective observational study, 60 patients was randomized equal into two groups to receive either propofol with nalbuphine or etomidate with nalbuphine.

INCLUSION CRITERIA:

1. Patients ranged from 18-60 years of age.
2. ASA I and II

EXCLUSION CRITERIA:

1. Patients allergic to propofol or etomidate.
2. History of seizure disorder.

3. Hypotensive patients.
4. Patients presenting with any primary or secondary steroid deficiency or receiving any steroid medication.
5. Pregnant patient

All patients were visited preoperatively and pre anesthesia check up was completed, present history, past history, allergic history, physical examination and laboratory examinations were done including ECC.

Using computer generated randomization; patients were allotted into two groups comprising 30 each Group "P" and group "E"

All patients were kept NPO for 8 hour, pre-medicated with inj ranitidine 50 mg IV. On reaching the operation theater electrocardiogram, non- invasive blood pressure, oxygen saturation and temperature were recorded. Ringer's lactate was started after securing a 20 G intravenous cannula. Glycopyrr olate 0.2 mg, midazolam 0.02 mg/kg and nalbuphine 0.1 mg/kg I.V. were injected followed by an induction dose of either propofol 1.5 mg/kg or etomidate 0.2 mg / kg. Vecuronium 0.08 mg/kg intravenous given and approximately 3 minutes after trachea was intubated with appropriate sized endotracheal tube.

The position of endotracheal tube was confirmed and positive pressure ventilation was initiated. Anesthesia was maintained with oxygen and nitrous oxide at the ratio of 1:3 with isoflurane and intermittent doses of vecuronium .was given throughout the surgery as required. The reversal of the neuromuscular block was done by 0.05 mg/kg neostigmine and 0.01 mg/kg glycopyrrolate intravenously and the patient was extubated after adequate respiration and when the patient was able to follow verbal commands.

Blood pressure both systolic and diastolic, mean blood pressure and heart rate were monitored.

All the parameters were noted at baseline, induction, 1min, 3min, 5min, and 10 min.

Pain on injection site, Apnea, and myoclonus were noted. The obtained results were sent for statistical analysis. P value less than 0.05 was considered significant.

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RESULTS

Parameter	Group P (30)	Group E (30)
Age in years	37.76±12.35	38.56±10.88
Weight in kg	65.36±13.40	66.83±10.79
Sex M/F	14/16	13/17
ASA I/II	15/15	18/12

TABLE 1- HEART RATE

Time in mins	Group P	Group E
baseline	78.43 ± 11.05	74.67 ± 11.91
induction	84.93 ± 11.97	81.2 ± 11.91
intubation	95.73 ± 12.53	87.48 ± 12.93
1 min	95.1 ± 10.35	84.2 ± 12.06
3 min	90.6 ± 10.37	81.6 ± 12.1
5 min	85.03 ± 10.42	78.63 ± 11.47
10 min	78.4 ± 8.48	77.03 ± 10.33

FIGURE 1- HEART RATE

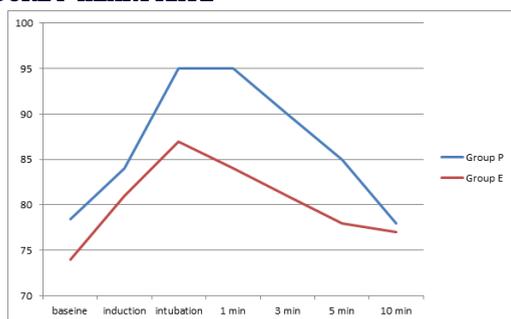
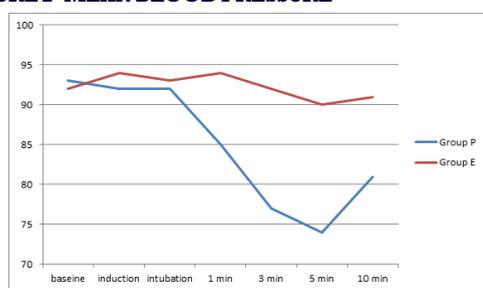


TABLE 2- MEAN BLOOD PRESSURE

Time in mins	Group P	Group E
baseline	93.66 ± 4.40	92.40 ± 4.24
induction	92.96 ± 6.02	94.73 ± 4.13
intubation	92.23 ± 5.24	93.66 ± 4.07
1 min	85.13 ± 5.38	94.56 ± 3.25
3 min	77.93 ± 4.04	92.23 ± 3.40
5 min	74.73 ± 3.43	90.43 ± 3.16
10 min	81.00 ± 3.33	91.60 ± 2.72

FIGURE 2- MEAN BLOOD PRESSURE



DISCUSSION

Etomidate is a cardio stable agent but causes adrenocortical suppression and propofol is alkyl phenol agent that decreases arterial blood pressure. Hypotension occurs with propofol is mainly due to reduction of sympathetic activity causing vasodilation or its direct effect on vascular smooth muscles⁴.

Almost all studies that are published are based on fentanyl, which is why we decided to conduct this study with nalbuphine instead of fentanyl.

In this study all patients were premedicated with inj ranitidine 50 mg IV, inj Glycopyrrolate 0.2 mg IV, inj midazolam 0.02 mg/kg iv and inj nalbuphine 0.1 mg/kg iv. Followed by an induction dose of either inj propofol 1.5 mg/kg IV or inj etomidate 0.2 mg / kg IV. Inj vecuronium 0.08 mg/kg intravenous was given and appropriate sized endotracheal

tube was used to intubate trachea.

Systolic blood pressure, diastolic blood pressure, mean blood pressure and heart rate were monitored.

All the parameters were noted at baseline, induction, 1min, 3min, 5min, and 10 min. Compilations and adverse effects were also noted.

We made sure that parameters such as age, sex ASA grading, weight, baseline blood pressure and baseline heart rate were not significantly different.

As per our observation there was sustained increase in the heart rate throughout induction and intubation in propofol group while etomidate kept the heart rate stable .other studies also found that propofol had both direct myocardial depression and decreased systemic vascular resistance .This has been implicated in producing profound hypotension following large bolus doses of propofol⁵.

The variations in the systolic, diastolic and mean blood pressure were greater in propofol group than in the etomidate group. Variations in the blood pressure may be multifactorial⁶.

Adverse effects such as pain, apnea and myoclonic jerks have been noticed. Pain was recorded more in propofol group that is in line with various other studies like Wu⁷ et al and yogesh kumar⁸. Incidence of apnea was equal in both groups. Myoclonic jerks were more in etomidate group. Myoclonic jerks were common in etomidate group in studies conducted by yogesh kumar, Miner et al⁹ and Desai et al⁹.

CONCLUSION

In our study etomidate group had stable hemodynamic features than propofol group. There was significant difference in the baseline and post induction hemodynamics of the propofol group but the etomidate group had hemodynamics which was non -significant.

REFERENCES

1. Maruyama, K., Nishikawa, Y., Nakagawa, H., Ariyama, J., Kitamura, A., & Hayashida, M. (2010). Can intravenous atropine prevent bradycardia and hypotension during induction of total intravenous anesthesia with propofol and remifentanyl?. *Journal of anesthesia*, 24(2), 293-296.
2. Ozgul, U., Begec, Z., Erdogan, M. A., Aydogan, M. S., Sanli, M., Colak, C., & Durmus, M. (2013). Effect of alkalinisation of lignocaine for propofol injection pain: a prospective, randomised, double-blind study. *Anaesthesia and intensive care*, 41(4), 501-504.
3. Frazee, B. W., Park, R. S., Lowery, D., & Baire, M. (2005). Propofol for deep procedural sedation in the ED. *The American journal of emergency medicine*, 23(2), 190-195.
4. Sarkar, M., Laussen, P. C., Zurakowski, D., Shukla, A., Kussman, B., & Odegard, K. C. (2005). Hemodynamic responses to etomidate on induction of anesthesia in pediatric patients. *Anesthesia & Analgesia*, 101(3), 645-650.
5. Dundee, J. W., Robinson, F. P., McCollum, J. S. C., & Patterson, C. C. (1986). Sensitivity to propofol in the elderly. *Anaesthesia*, 41(5), 482-485.
6. Kumar Y 1 et al. (2016). Comparison of Propofol and Etomidate in Patients under General Anaesthesia. *International Journal Of Contemporary Medical Research*, 3(12):3488-3490.
7. Wu, J., Yao, S., Wu, Z., Wu, Z., Chu, S., Xia, G., & Deng, F. (2013). A comparison of anesthetic regimens using etomidate and propofol in patients undergoing first-trimester abortions: double-blind, randomized clinical trial of safety and efficacy. *Contraception*, 87(1), 55-62.
8. Miner, J. R., Danahy, M., Moch, A., & Biros, M. (2007). Randomized clinical trial of etomidate versus propofol for procedural sedation in the emergency department. *Annals of emergency medicine*, 49(1), 15-22.
9. Desai U H, Shriyan D, Dasgupta D. (2016) A Randomized Control Trial Comparing Propofol with Midazolam and Fentanyl Combination for Sedation in Gastrointestinal Endoscopies. *International Journal of Contemporary Medical Research*. 3:2189-2193.