



Original Research Article

To compare the hemodynamic effects of the infusion of both intravenous induction anaesthetic agents Etomidate and Propofol under bispectral index guidance

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ABSTRACT

Background: Intravenous anaesthetic agents are preferred to induce anaesthesia in day to day practice because of rapid and smoother action with fewer risks. An ideal induction agent for general anaesthesia should have hemodynamic stability, minimal respiratory side effects and rapid clearance.

Materials and Methods: This is a prospective, randomised, single blind, control study of total 60 patients. This study was carried out in Department of Anaesthesiology, at a Tertiary Care Teaching Hospital over a period of 1 year. In this study, a total of 60 patients undergoing elective surgery under general anaesthesia were randomized into two groups comprising of 30 patients in each group using envelop method. Group A- Patients received Inj. Etomidate infusion at the rate of 0.05 mg/kg/min through syringe infusion pump, and Group B – Patients received Inj. Propofol infusion at the rate of 0.5 mg/kg/min through syringe infusion pump.

Results: The hemodynamic response during induction of general Anaesthesia using Inj. Etomidate and Inj. Propofol under BIS guidance. There was no statistically significant difference observed in mean time taken for induction in both the groups. Mean consumed dose for Etomidate was 0.18+0.05 mg/kg and for Propofol group was 1.82+0.34 mg/kg. There was statistically significant fall in mean arterial blood pressure observed in Group B compared to Group A during and after induction up to 7 minutes. After that there was no significant difference observed in both the groups.

Conclusion: Propofol resulted in hypotension and bradycardia even with the reduced doses given with BIS-guided protocol. However, Etomidate provides more hemodynamic stability during induction and in post induction period also. So, Etomidate can be a better choice of agent for induction of General Anaesthesia as compared to Propofol.

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1. Introduction

Intravenous anaesthetic agents are preferred to induce anaesthesia in day to day practice because of rapid and smoother action with fewer risks. An ideal induction agent for general anaesthesia should have hemodynamic stability, minimal respiratory side effects and rapid clearance.¹

Propofol is frequently used intravenous anaesthetic agent. It is presumed to exert its sedative hypnotic effects

through an interaction with gamma- amino butyric acid (GABA) receptor complex.² Propofol has satisfactory recovery rate, short half-life, rapid elimination from the blood circulation, causing less sedative effects and vomiting effect.³ the patients regardless of any underlying conditions.⁴ The main cause for hypotension is due to the reduction of heart's preload and afterload, which are not synchronized with heart's compensatory responses and would be intensified by high doses and high-speed injection of the drug.⁵

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Etomidate is also a good agent with similar onset and duration of action as Propofol.⁶ Etomidate has GABA-Like effects and act by modulating and mimicking GABA-A receptor mediated chloride current. Etomidate is an ultra-short acting induction agent with rapid onset of anaesthesia (5-15 sec) and also rapid recovery from anaesthesia (within 5-10 mins of last injection).⁷ Etomidate is beneficial in day care surgery, in short surgical procedures, in high cardiac risk patients, in anaesthesia for diagnostic and elective procedures.⁸

To balance above mentioned problems, we need accurate and precise monitoring during intraoperative period which can help us to decide exact dosage of drug and depth of anaesthesia various monitors are in use like Bispectral Index, Entropy and Narcotrend Index.

2. Materials and Methods

This is a prospective, randomised, single blind, control study of total 60 patients. This study was carried out in Department of Anaesthesiology, at a Tertiary Care Teaching Hospital over a period of 1 year.

2.1. Inclusion criteria

ASA I / II Patients of either sex with age between 18-65 years. Patients posted for elective general surgery under General Anaesthesia of 1-3 hours duration where not much blood loss is expected.

2.2. Exclusion criteria

Patient with any systemic disease like cardiac disease, lung disorder, neurological problems, hepatic or renal dysfunction diagnosed by clinical judgements and investigations.

1. Patients having allergy to Propofol and Etomidate.
2. Patients having chronic abuse of alcohol
3. Patients having BMI >30
4. Patients having H/O Epilepsy
5. Patients of septicemia or patient on long term steroid therapy or known adrenal insufficiency.

2.3. Grouping of patients

In this study, a total of 60 patients undergoing elective surgery under general anaesthesia were randomized into two groups comprising of 30 patients in each group using envelop method.

Among the two groups,

Group A- Patients received Inj. Etomidate infusion at the rate of 0.05 mg/kg/min through syringe infusion pump, and

Group B – Patients received Inj. Propofol infusion at the rate of 0.5 mg/kg/min through syringe infusion pump.

2.4. On the day of operation

After confirming nil by mouth status, written informed consent was taken and patients were taken to operation theatre.

In Operation Theatre (OT), an intravenous line (IV) was secured with 18 G cannula and ringer lactate drip was started. Thereafter vital parameters of the patient were recorded, including blood pressure, pulse rate and oxygen saturation.

After cleaning the forehead with spirit and drying it, BIS quarto electrodes were placed and attached with monitor.

Lead 1 - At the centre of forehead approx. 2 inches above the bridge of nose.

Lead 4 - Directly above eyebrow.

Lead 3 - On temple, between corner of eye and hairline.

After that baseline value of BIS was noted.

2.5. Monitoring

The patient's haemodynamic and cardiovascular indicators such as heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), BIS value was immediately after premedication, before induction, every minute during induction agent infusion, at intubation and every 1 minute upto 5 minutes, then every 2 minutes upto 15 mins after intubation, thereafter every 15 minutes till surgery is over.

2.6. Induction

Patient was preoxygenated with 100% oxygen for 3 minutes.

Anaesthesia was induced with inj. Etomidate infusion 0.05 mg/kg/min and Propofol infusion at the dose of 0.5 mg/kg/min through syringe infusion pump for group A and group B respectively. As soon as BIS value reached 60, infusion was stopped, and consumed anaesthetic dose was noted. The time taken to achieve BIS value 60, was also noted. After confirmation of bag and mask ventilation, intravenous succinylcholine 2 mg/kg was given and patients were intubated with appropriate size cuffed oral endotracheal tube. Endotracheal tube placement was confirmed with bilateral equal air entry and capnography.

2.7. Maintenance

After intubation, close circuit was attached and fresh gas flow at the rate of 4 L/min (Oxygen 2 L+ Nitrous oxide 2 L) and inhalational agent sevoflurane was used to maintain the anaesthesia. As soon as the spontaneous respiration returned, an intermediate acting non depolarizing muscle relaxant inj. Vecuronium bromide 0.1 mg/kg loading dose followed by 0.025 mg/kg top up dose was administered. Patients were ventilated with Drager Fabius ventilator throughout the surgery.

2.8. Statistical analysis

Mean and Standard values were taken out. Analysis of variance (ANOVA) of the data for the various parameters was done using student's paired t- test for intragroup comparison and unpaired t-test for intergroup comparison. The significance of ANOVA was $p > 0.05$ not significant, $p < 0.05$ significant and $p < 0.01$ highly significant.

3. Results

The hemodynamic response during induction of general Anaesthesia using Inj. Etomidate and Inj. Propofol under BIS guidance.

Table 1: Demographic data

	Group A	Group B	P value
Age (Years)	39+ 9.62	34+14	>0.05
Gender			
Female	13	20	>0.05
Male	17	10	
ASA			
Grade I	25	26	>0.05
Grade II	05	04	
Weight (KG)	52.66+ 6.6	55.34+7.32	>0.05

As shown in Table 1, the number of patients in each group was 30. The mean age of patients was 39+ 9.62 years in Group A and 34+ 14 years in group B. ($p > 0.05$: not significant). The ratio of male: female was 17:13 (56.6%: 43.3%) in group A and 10:20 (33.3%:66.6%) in group B ($p > 0.05$: not significant). The mean weight of patients was 52.66 + 6.6 kg in group A and 55.34 + 7.32 kg in group B. ($p > 0.05$: not significant). There were 25 ASA I and 5 ASA II patients in group A and 26 ASA I and 4 ASA II patients in group B. Thus, both the groups were comparable with regards to age, gender, weight and ASA physical status of patients ($p > 0.05$: not significant).

Table 2: Types of surgery

Type of surgery	Group A	Group B	Intergroup p value
Mastectomy	6	11	>0.05
Mastoidectomy	8	5	>0.05
Appendectomy	5	5	>0.05
Colostomy	3	5	>0.05
Hernia repair	5	2	>0.05
Septoplasty	3	2	>0.05

Table 2 show types of surgeries included in our study. All the surgeries in both the groups were elective surgeries. Number and type of surgeries were comparable and there was no statistically significant difference.

There was no statistically significant difference observed in mean time taken for induction in both the groups.

Table 3: Time taken for induction

Group	Time taken for induction Mean + Standard deviation (in minutes)	p value
A (Etomidate)	3.59+0.96	>0.05
B (Propofol)	3.54+0.74	>0.05

Table 4: Mean consumed dose

Group	Consumed dose Mean + Standard deviation (in mg/kg)
A (Etomidate)	0.18+0.05
B (Propofol)	1.82+0.34

Mean consumed dose for Etomidate was 0.18 ± 0.05 mg/kg and for Propofol group was 1.82 ± 0.34 mg/kg.

3.1. Intragroup study

Group A- As shown in Table 5, baseline heart rate value was 90.20 ± 13.14 /min in group A. There was no significant change in heart rate upto 4 minutes during induction which increased at the time of intubation (95.76 ± 15.98 /min) and 1 min after intubation (96.53 ± 13.06) which was significant and came to baseline at 9 minutes (90.43 ± 10.8 /min).

Group B-As shown in Table 5 baseline heart rate value was 90.9 ± 14.53 /min in group B which decreased at 2 minutes during induction (87.16 ± 15.33 /min) and at the time of intubation there was no significant change in heart rate compared to baseline value.

3.2. Intergroup study

As shown in Table 5, baseline pulse rate was comparable in both the groups. There was no statistically significant difference observed in heart rate in both the groups during induction, at intubation and intraoperative period.

3.3. Intragroup study

Group A- As shown in Table 6, baseline systolic blood pressure value was 125.10 ± 14.08 mm Hg in group A. There was significant fall in Systolic blood pressure after 7 minutes of premedication which remained decreased up to 9 minutes of premedication (115.78 ± 12.44 mm Hg) and came to baseline at intubation (123.20 ± 14.82 mm Hg).

Group B- As shown in Table 6, baseline systolic blood pressure value was 122.23 ± 13.7 mm Hg in group B which significantly decreased during induction (102.88 ± 13.41 mm Hg), at the time of intubation (115.76 ± 13.60 mm Hg) and upto 15 minutes after intubation. There was no significant change in Systolic blood pressure after that, compared to baseline value.

Table 5: Heart rate monitoring

	Group A		Group B		Intergroup p value
	Mean \pm Standard deviation	Intragroup p value	Mean Standard deviation	Intragroup p value	
Baseline	90.20 \pm 13.14		90.9 \pm 14.53		>0.05
5 minutes After premedication	89.66 \pm 13.57	>0.05	89.50 \pm 16.39	>0.05	>0.05
Before induction	87.36 \pm 15.17	>0.05	88.20 \pm 15.54	>0.05	>0.05
1 min during induction	89.36 \pm 16.77	>0.05	88.53 \pm 14.74	>0.05	>0.05
2 min during induction	90.03 \pm 15.64	>0.05	87.16 \pm 15.33	>0.05	>0.05
3 min during induction	89.65 \pm 14.93	>0.05	88.30 \pm 14.52	>0.05	>0.05
4 min during induction	89.78 \pm 14.29	>0.05	85.05 \pm 11.55	>0.05	>0.05
At intubation	95.76 \pm 15.98	<0.05	91.06 \pm 15.96	>0.05	>0.05
1 min	96.53 \pm 13.06	<0.05	92.43 \pm 15.60	>0.05	>0.05
2 min	93.63 \pm 11.54	>0.05	92.33 \pm 15.77	>0.05	>0.05
3 min	93.73 \pm 12.25	>0.05	90 \pm 15.90	>0.05	>0.05
4 min	92.50 \pm 13.20	>0.05	88.76 \pm 15.16	>0.05	>0.05
5 min	93.30 \pm 12.47	>0.05	87.93 \pm 14.71	>0.05	>0.05
7 min	92.20 \pm 12.17	>0.05	87 \pm 13.57	>0.05	>0.05
9 min	90.43 \pm 10.8	>0.05	86.06 \pm 13.47	>0.05	>0.05
11 min	90.16 \pm 10.70	>0.05	85.93 \pm 13.32	>0.05	>0.05
13 min	91.43 \pm 11.5	>0.05	85.93 \pm 13.32	>0.05	>0.05
15 min	90.73 \pm 10.20	>0.05	86.93 \pm 12.98	>0.05	>0.05
30 min	90.63 \pm 9.87	>0.05	87.73 \pm 13.47	>0.05	>0.05
45 min	90.30 \pm 9.94	>0.05	87.73 \pm 12.32	>0.05	>0.05
1 hour	88.84 \pm 11.20	>0.05	84.96 \pm 11.88	>0.05	>0.05

3.4. Intergroup study

As shown in Table 6, baseline systolic blood pressure was comparable in both the groups. When compared to Group A, there was statistically significant fall in systolic blood pressure observed in Group B during induction, at intubation and upto 7 minutes after intubation.

3.5. Intragroup study

Group A- As shown in Table 7, baseline Diastolic blood pressure value was 78.10 \pm 11.94 mm Hg in group A. There was significant fall in Diastolic blood pressure after 7 minutes of premedication which remained decreased upto 9 minutes of premedication (74.73 \pm 11.56 mm Hg) and after that there was no significant fall in diastolic blood pressure during intraoperative period.

Group B- As shown in Table 7, baseline Diastolic blood pressure value was 80.70 \pm 9.27 mm Hg in group B which significantly decreased during induction (68.44 \pm 11.53 mm Hg), at the time of intubation (75.93 \pm 9.30 mm Hg) and during intraoperative period also (upto 1 hour after intubation) compared to baseline value.

3.6. Intergroup study

As shown in Table 7, baseline Diastolic blood pressure was comparable in both the groups. There was statistically significant decrease in diastolic blood pressure observed in group B after intubation upto 7 minutes when compared to group A. After that, there was no significant difference observed in both the groups.

3.7. Intragroup study

Group A- As shown in Table 8, Mean Arterial blood pressure value was 92.8 \pm 12.31 mm Hg in group A. There was significant fall in Mean Arterial blood pressure after 7 minutes of premedication which remained decreased upto 9 minutes of premedication (74.73 \pm 11.56 mm Hg) and after that there was no significant fall in Mean Arterial blood pressure during intraoperative period.

Group B- As shown in Table 8, baseline Mean Arterial blood pressure value was 94 \pm 10.34 mm Hg in group B which significantly decreased during induction (94 \pm 10.34 mm Hg), and during intraoperative period also (upto 1 hour after intubation) compared to baseline value.

Table 6: Systolic blood pressure monitoring

	Group A		Group B		Intergroup p value
	Mean + Standard deviation	Intragroup p value	Mean + Standard deviation	Intragroup p value	
Baseline	125.10±14.08		122.23±13.7		>0.05
5 minutes after premedication	120.76±15.12	>0.05	117.16±13.85	>0.05	>0.05
Before induction	119.63±14.03	>0.05	118.40±13.83	>0.05	>0.05
1 min during induction	120.6±13.23	>0.05	115.52±14.54	<0.05	>0.05
2 min during induction	118.20±13.05	<0.05	111.60±14.13	<0.05	>0.05
3 min during induction	117.42±11.64	<0.05	107.30±12.89	<0.05	<0.05
4 min during induction	115.78±12.44	<0.05	102.88±13.41	<0.05	<0.05
At intubation	123.20±14.82	>0.05	115.76±13.60	<0.05	<0.05
1 min	124.13±15.0	>0.05	119.10±16.05	>0.05	>0.05
2 min	125.40±14.71	>0.05	116.76±14.22	>0.05	<0.05
3 min	125.80±13.44	>0.05	115.36±13.08	<0.05	<0.05
4 min	124.10±17.35	>0.05	111.50±12.08	<0.05	<0.05
5 min	119.30±14.34	>0.05	112.36±14.74	<0.05	>0.05
7 min	119.06±12.07	<0.05	110.83±14.44	<0.05	<0.05
9 min	118.40±12.03	<0.05	114.26±12.97	<0.05	>0.05
11 min	118.60±11.32	<0.05	116.70±13.41	<0.05	>0.05
13 min	119.73±10.19	>0.05	115.20±12.43	<0.05	>0.05
15 min	122.83±9.52	>0.05	115.50±12.07	<0.05	>0.05
30 min	120.76±10.44	>0.05	117.23±13.06	>0.05	>0.05
45 min	120.60±10.44	>0.05	116.96±13.04	>0.05	>0.05
1 hour	120.40±9.94	>0.05	116.65±14.69	>0.05	>0.05

3.8. Intergroup study

As shown in Table 8, baseline Mean Arterial blood pressure was comparable in both the groups. There was statistically significant fall in Mean Arterial blood pressure observed in Group B when compared to Group A, during after induction and upto 7 minutes. After that there was no significant difference observed in both the groups.

4. Discussion

Anaesthetic induction techniques are usually based on considerations such as hemodynamic stability, effects on myocardial oxygen supply and demand and minimizing intubation stress response.⁹ Induction with intravenous agents is usually smoother and more rapid than that associated with most of the inhalational agents.¹⁰

Propofol is commonly used intravenous anaesthetic agent but it produces hemodynamic instability such as bradycardia and hypotension which can be deleterious in cardiac patients and patients in shock.¹¹

Etomidate is the intravenous anaesthetic agent without any analgesic effect and posses hypnotic effect. It has minimal hemodynamic and ventilator depressant effects and does not trigger histamine release. Cardiovascular and

respiratory systems appear minimally affected and there is no indication of organ toxicity or other biochemical or hematologic drug- induced disturbances.¹²

Thus Etomidate has following advantages over other Intravenous induction agents.

1. Minimum effect on cardiovascular parameters
2. Less respiratory depression
3. Lowest risk of hypersensitivity reaction
4. Lesser pain at site of injection
5. No thrombophlebitis
6. Less incidence of nausea and vomiting
7. Wide therapeutic index

BIS monitors are noninvasive devices that reflect a signal processed EEG. Since the introduction of Bispectral Index in 1992, it has steadily gained clinical acceptance as a reliable measure to monitor the effects of anaesthesia and sedation on the brain. A BIS monitor provides a continuous display of the current BIS and several parameters important to BIS monitoring.¹³ The BIS value between 40 to 60 indicates an appropriate level for general anaesthesia. When the patient is awake, the cerebral cortex is very active and the EEG reflects vigorous activity. The pattern of activities changes when the patient is asleep or under general anaesthesia.¹⁴

Table 7: Diastolic blood pressure monitoring

	Group A		Group B		Intergroup p value
	Mean± Standard deviation	Intragroup p value	Mean± Standard deviation	Intragroup p value	
Baseline	78.10±11.94		80.70±9.27		>0.05
5 minutes after premedication	76.03±12.33	>0.05	75.86±12.34	<0.05	>0.05
Before induction	76.36±12.19	>0.05	75.90±13.77	<0.05	>0.05
1 min during induction	76.83±11.88	>0.05	74.50±11.81	<0.05	>0.05
2 min during induction	73.13±10.52	<0.05	71.43±11.02	<0.05	>0.05
3 min during induction	74.03±10.40	<0.05	71.03±11.30	<0.05	>0.05
4 min during induction	74.73±11.56	<0.05	68.44±11.53	<0.05	>0.05
At intubation	79.23±11.82	>0.05	75.93±9.30	<0.05	>0.05
1 min	81.60±11.91	>0.05	76.66±10.90	<0.05	>0.05
2 min	80.46±10.13	>0.05	74.93±10.77	<0.05	<0.05
3 min	80.06±10.48	>0.05	74.36±9.92	<0.05	<0.05
4 min	80.70±11.90	>0.05	71.50±9.92	<0.05	<0.05
5 min	76.93±11.68	>0.05	70.66±10.59	<0.05	<0.05
7 min	76.30±10.18	>0.05	70.96±11.14	<0.05	<0.05
9 min	77.40±9.33	>0.05	73.53±9.27	<0.05	>0.05
11 min	76.63±10.12	>0.05	74.80±9.53	<0.05	>0.05
13 min	76.43±10.87	>0.05	74.43±9.19	<0.05	>0.05
15 min	78.66±11.56	>0.05	73.93±10.14	<0.05	>0.05
30 min	78.96±11.60	>0.05	74.50±12.27	<0.05	>0.05
45 min	78.46±11.2	>0.05	90.86±11.31	<0.05	>0.05
1 hour	78±11.25	>0.05	72.62±12.34	<0.05	>0.05

Under sedation can increase patient's anxiety, agitation and the possible risk that the patient will be aware of and able to recall the surgery or procedure. Over sedation can adversely affect patient's vital signs and impair the ability to breathe. It can also increase the risk of complications, delay recovery, prolong the time of hospital stay and raise the cost.¹⁵

Propofol caused hypotension is due to the reduction of heart's preload and after load, which is not synchronized with heart's compensatory responses such as increased cardiac output and increased heart rate as seen by Schmidt C et al.¹⁶ in their study. This hemodynamic drop would be intensified by high doses of the drug and high speed of the injection of the drug.

Muriel C¹⁷ studied anesthetic characteristics in three homogeneous groups of twenty patients of ASA I grade who underwent intravenous anesthetic induction with Propofol 2 mg/kg; thiopentone 5 mg/kg; or Etomidate 0.3 mg/kg. Intravenous injection of the three anesthetic agents was followed by a decrease in systolic and diastolic arterial pressure. Heart rate increased after thiopental and Etomidate and had only slight fluctuations after Propofol. After tracheal intubation, there was a significant increase in systolic and diastolic arterial pressure and heart rate in Thiopental and Etomidate group. These changes were

minimal after Propofol.¹⁸

Sarkar M et al.¹⁹ while studying found that Etomidate's effect on the hemodynamic condition of the patients is more controllable than Propofol's effect. Moller Petrun²⁰ compared the hemodynamic effects of a bispectral index guided Etomidate and Propofol infusion for anaesthesia induction in patients undergoing major abdominal surgery in forty –six patients with a BIS value of 60 titrated infusion of Etomidate (E group) or Propofol (P group). Before intubation, no significant differences between the two groups regarding the hemodynamics were noticed. At the intubation and upto 7 mins after intubation MAP (P=0.019) was significantly higher in the E group with respect to group p 2,6,7 min after intubation. The incidence of hypotension was higher in P group than in E group, and the incidence of hypertension was significantly higher in E group than that in P group. Their study showed that the use of Propofol resulted in less hypertension and tachycardia at and after intubation than Etomidate. But even with the reduced doses given with the BIS guided protocol, it often caused significant hypotension.²¹

Table 8: Mean Arterial Blood Pressure Monitoring

	Group A		Group B		Intergroup p value
	Mean± Standard deviation	Intragroup p value	Mean± Standard deviation	Intragroup p value	
Baseline	92.8±12.31		94±10.34		>0.05
After premedication	90.2±12.52	>0.05	88.6±11.87	<0.05	>0.05
Before induction	89.03±12.06	>0.05	89.23±12.93	<0.05	>0.05
1 min during induction	89.96±12.08	>0.05	87.56±11.78	<0.05	>0.05
2 min during induction	86.9±10.69	<0.05	84±12.06	<0.05	>0.05
3 min during induction	87.11±10.50	<0.05	82.57±11.55	<0.001	>0.05
4 min during induction	74.73±11.56	<0.05	79.44±11.53	<0.05	<0.05
At intubation	92.96±12.50	>0.05	89.2±9.74	>0.05	>0.05
1 min	94.7±12.10	>0.05	90.3±11.50	<0.05	>0.05
2 min	93.96±10.84	>0.05	88.9±10.85	<0.05	>0.05
3 min	93.8±10.28	>0.05	87.06±10.37	<0.05	<0.05
4 min	95.76±11.24	>0.05	84.16±9.86	<0.05	<0.05
5 min	90.33±10.78	>0.05	84.03±11.31	<0.05	<0.05
7 min	88.9±10.34	>0.05	83.76±11.50	<0.001	>0.05
9 min	87.8±13.05	>0.05	87.03±8.86	<0.05	>0.05
11 min	89.1±10.78	>0.05	87.86±9.66	<0.05	>0.05
13 min	89.23±10.85	>0.05	86.3±9.66	<0.05	>0.05
15 min	92.13±10.65	>0.05	87.3±9.59	<0.05	>0.05
30min	90.86±11.31	>0.05	87.33±12.14	<0.05	>0.05
45 min	86.82±12.36	>0.05	61.68±5.06	<0.05	>0.05
1 hour	90.52±11.14	>0.05	86.82±12.36	<0.05	>0.05

5. Conclusion

From our study, we can conclude that use of Propofol resulted in hypotension and bradycardia even with the reduced doses given with BIS- guided protocol. However, Etomidate provides more hemodynamic stability during induction and in post induction period also. So, Etomidate can be a better choice of agent for induction of General Anaesthesia as compared to Propofol.

6. Source of Funding

None.

7. Conflict of Interest

The author declares no conflict of interest.

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