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ORIGINAL RESEARCH

Hemodynamic changes with Propofol and Etomidate during General Anaesthesia

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ABSTRACT

Background: By attenuating autonomic nervous activity, myocardial depression, and vasodilatation, general anesthetic induction drugs can lower arterial blood pressure. The present study was conducted to assess hemodynamic changes with Propofol and Etomidate during general anaesthesia. **Materials & Methods:**64 patients scheduled for surgical procedure under general anaesthesiaof both genderswere divided into 2 groups of 32 each. Group I patients received Propofol, and group II received Etomidate. All the patients were premedicated with alprazolam 0.25 mg and ranitidine 150 mg one night before the surgery. All the hemodynamic parameter was recorded during the surgery procedure. **Results:** Group I had 20 males and 12 females and group II had 16 males and 16 females. The mean heart rate (beats/min) at baselinewas 84and 85, at induction was 85 and 88, at laryngoscopy was 86 and 88, at one minute was 88 and 90, at five minutes was 86 and 89 and at fifteen minutes was 88 and 89. The mean arterial pressure (mm Hg) at baseline was 94 and 96, at induction was 105 and 94, at laryngoscopy was 97 and 95, at one minute was 98 and 92, at five minutes was 90 and 92 and at fifteen minutes was 92 and 91 in group I and II respectively. The difference was significant (P< 0.05). **Conclusion:** Etomidate was discovered to be a more effective anesthetic agent than propofol.

Key words: Propofol, Etomidate, general anaesthesia

INTRODUCTION

By attenuating autonomic nervous activity, myocardial depression, and vasodilatation, general anesthetic induction drugs can lower arterial blood pressure.[1] On the other hand, unintended cardiovascular reactions such hypertension, tachycardia, and dysrhythmias are brought on by laryngoscopy and endotracheal intubation. This can occasionally cause a "alpine hemodynamic response" when general anesthesia is induced.[2]

Propofol is a sedative-hypnotic drug that is nonopioid, nonbarbiturate, and has a quick start and short half-life.[3] Injection discomfort and hypotension are examples of adverse effects. Etomidate is a hypnotic that has a very stable hemodynamic profile and very little histamine production. However, the most frequent adverse effects of this medication include myoclonus and injection discomfort.[4] The novel fat emulsion of etomidate (Medium chain triglyceride and soya bean called Etomidate – Lipuro, B. Braun, Melsungen, Germany) has eliminated injection pain, venous irritation, and hemolysis; however, the incidence of myoclonus following etomidate injection has not decreased by this new solvent.[5] In patients with open globe injuries or emergency non-fasting circumstances, myoclonus is a major concern. Etomidate exhibits a little depressing effect on blood pressure during induction, contributing to its good hemodynamic profile.[6]The present study was conducted to assess hemodynamic changes with Propofol and Etomidate during general anaesthesia.

MATERIALS & METHODS

The present study consisted of 64patients scheduled for surgical procedure under general anaesthesiaof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 32 each. Group I patients received Propofol, and group II received Etomidate. All the patients were premedicated with alprazolam 0.25 mg and ranitidine 150 mg one night

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before the surgery. All the hemodynamic parameter was recorded during the surgery procedure. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table: I Distribution of patients

Groups	Group I	Group II
Drug	Propofol	Etomidate
M:F	20:12	16:16

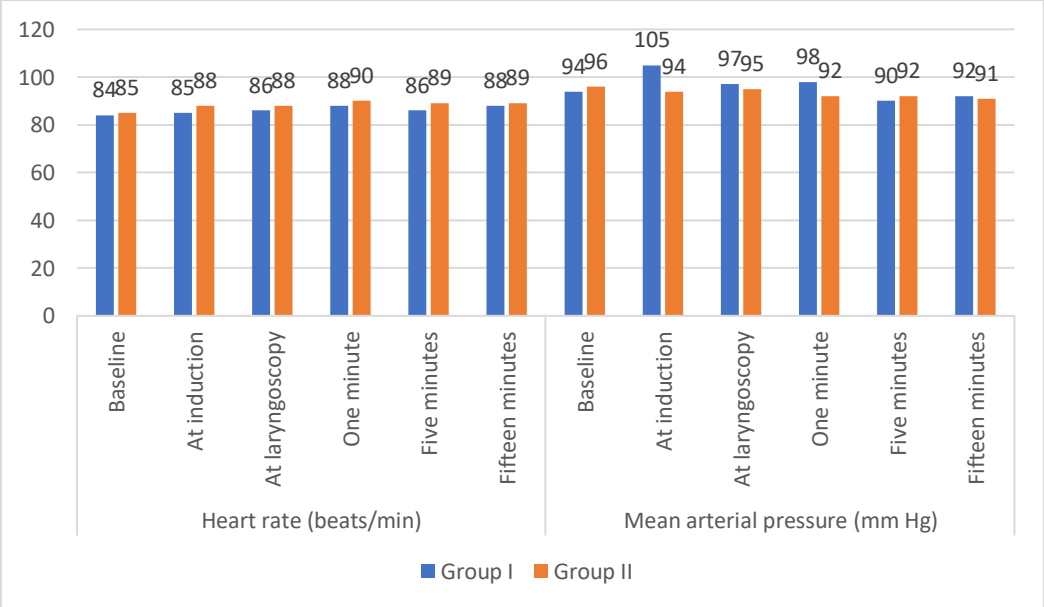
Table I shows that group I had 20 males and 12 females and group II had 16 males and 16 females.

Table: II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Heart rate (beats/min)	Baseline	84	85	0.91
	At induction	85	88	
	At laryngoscopy	86	88	
	One minute	88	90	
	Five minutes	86	89	
	Fifteen minutes	88	89	
Mean arterial pressure (mm Hg)	Baseline	94	96	0.05
	At induction	105	94	
	At laryngoscopy	97	95	
	One minute	98	92	
	Five minutes	90	92	
	Fifteen minutes	92	91	

Table II, graph I shows that mean heart rate (beats/min) at baseline was 84 and85, at induction was 85 and 88, at laryngoscopy was 86 and 88, at one minute was 88 and 90, at five minutes was 86 and 89 and at fifteen minutes was 88 and 89. The mean arterial pressure (mm Hg) at baseline was 94 and 96, at induction was 105 and 94, at laryngoscopy was 97 and 95, at one minute was 98 and 92, at five minutes was 90 and 92 and at fifteen minutes was 92 and 91 in group I and II respectively. The difference was significant (P< 0.05).

Graph: I Comparison of parameters



DISCUSSION

Drugs known as induction agents are those that, when administered intravenously at the proper dose, quickly induce unconsciousness.[7] Prior to other medications being administered to maintain anesthesia, induction agents are used as the only medication for brief procedures, to maintain anesthesia for longer procedures through intravenous infusion, and to provide conscious sedation during procedures carried out in an intensive care unit or under local anesthesia.[8,9]The present study was conducted to assess hemodynamic changes with Propofol and Etomidate during general anaesthesia.

We found that group I had 20 males and 12 females and group II had 16 males and 16 females.Propofol and etomidate were compared by Aggarwal S et al[10]

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for their impact on hemodynamics and other side effects on patients undergoing general anesthesia. 100 ASA I and II patients, aged 18 to 60, who were scheduled for elective surgery under general anesthesia were split into two groups at random, each with 50 participants, and given an induction agent consisting of 0.3 mg/kg of etomidate and 2 mg/kg of propofol. The demographic characteristics of the two groups were similar. The mean arterial pressure (MAP) and heart rate (HR) of patients in the etomidate group did not differ significantly from baseline values when compared to propofol ($p>0.05$). While myoclonus activity was higher in the etomidate group, the propofol group had more pain during injection. According to the results of their investigation, etomidate is a more effective induction drug than propofol in terms of hemodynamic stability.

We observed that mean heart rate (beats/min) at baselinewas 84and 85, at induction was 85 and 88, at laryngoscopy was 86 and 88, at one minute was 88 and 90, at five minutes was 86 and 89 and at fifteen minutes was 88 and 89. The mean arterial pressure (mm Hg) at baseline was 94 and 96, at induction was 105 and 94, at laryngoscopy was 97 and 95, at one minute was 98 and 92, at five minutes was 90 and 92 and at fifteen minutes was 92 and 91 in group I and II respectively. Hemodynamic alterations and complications brought on by propofol and etomidate during general anesthesia were evaluated by Bansal et al.[11] The incidence of complications was somewhat greater in group A individuals. Patients in group A had mean arterial pressure values of 92, 76, 105, 101, 92, and 95 at baseline, induction, laryngoscopy, one minute, five minutes, and fifteen minutes, respectively. Patients in group B had mean arterial pressure values of 95, 89, 95, 97, 94, and 96 at baseline, induction, laryngoscopy, one minute, five minutes, and fifteen minutes, respectively. Statistical analysis revealed that group A patients' mean arterial pressure and mean heart rate are significantly changed at various time intervals.[12-15]

The limitation of the study is small sample size.

CONCLUSION

Authors found that etomidate was discovered to be a more effective anesthetic agent than propofol.

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