

## A COMPARATIVE STUDY OF KETOFOL (KETAMINE AND PROPOFOL) WITH PROPOFOL ALONE TO SEE EFFECT ON PULSE RATE DURING INDUCTION AND MAINTENANCE PHASE OF ANAESTHESIA IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

Dr. Priyanka Thakur<sup>1</sup>, Dr. Prteet Negi<sup>2</sup>, Prof. Dr. Ajay Sood<sup>3</sup>, Dr. Aparna Sharma<sup>4</sup>

<sup>1</sup> MD, Department of Anaesthesia, Indira Gandhi Medical College, Shimla, H.P., India

<sup>2</sup> MS, Department of General Surgery, Dr. Rajender Prasad Medical College Kangra, Tanda H.P., India

<sup>3</sup> MD, Department of Anaesthesia, Indira Gandhi Medical College, Shimla, H.P., India

<sup>4</sup> MD, Department of Anaesthesia, Indira Gandhi Medical College, Shimla, H.P., India

**Article Info:** Received 08 April 2021; Accepted 09 June 2021

**DOI:** <https://doi.org/10.32553/ijmbs.v5i6.1971>

**Corresponding author:** Dr. Prteet Negi

**Conflict of interest:** No conflict of interest.

### Abstract

**Background:** In this study, we aimed to evaluate the intra and post-operative pulse rate of ketamine-propofol mixture (Ketofol) infusion in comparison with propofol infusion.

**Methods:** Prospective, randomized, double blinded controlled trial. After approval by the research ethics committee and written informed valid consent of the patients, the proposed study was carried out for a period of one year in 60 patients, in ASA-I and ASA-II patients, aged between 19 to 60 years of either sex, who were posted for laparoscopic cholecystectomy surgery at Indira Gandhi Medical College, Shimla.

**Results:** HR for group K was significantly increased during intubation ( $89.30 \pm 13.22$ ), 1 minute after intubation ( $91.30 \pm 14.28$ ), at 5 minute ( $88.73 \pm 11.94$ ) and 10 minute ( $89.17 \pm 12.53$ ) in intraoperative period, every 5 minute before extubation ( $89.77 \pm 12.82$ ,  $89.93 \pm 12.50$ ,  $90.13 \pm 12.42$ ), during extubation ( $92.10 \pm 10.88$ ) and at first 30 minutes in post operative period ( $88.17 \pm 8.76$ ) as compared to baseline HR ( $82.80 \pm 10.95$ ). HR in group P was significantly increased at 1 min after intubation ( $81.93 \pm 10.77$ ), during extubation ( $85.80 \pm 11.24$ ) and initial 30 minute of postoperative period ( $82.80 \pm 10.56$ ) as compared to baseline HR ( $76.80 \pm 12.55$ ).

**Conclusion:** HR parameter was significantly on higher side in group K during intubation, one -five -10 minutes after intubation, at 15 minutes before extubation, during extubation and at first 30 minutes of postoperative period as compared to group P where it significantly increased at one minute after intubation, during extubation and at initial 30 minutes of postoperative period when compared with their respective baselines

**Keywords:** Pulse rate, Propofol, Ketamine

### Introduction:

Propofol is a 2, 6-diisopropylphenol which act by facilitation of inhibitory neurotransmission mediated by GABA. Its main advantages are its rapid induction<sup>12</sup> and recovery, antiemetic effects, antipruritic and anticonvulsant effects. Their bronchodilating properties make it favourable for COPD patients. Hemodynamic responses mainly include mild change in heart rate and preservation of global myocardial oxygen supply to demand ratio. When given as component of tiva it can be given as manually controlled infusion or target controlled infusion. In manual controlled infusion Bristol infusion regimen<sup>1,2</sup>(10-8-6) based on lean body weight is most commonly followed.

Apart from other disadvantages of propofol like more costly than volatile anesthetics, risk of awareness if intravenous access is not maintained, its main disadvantage lies in its dose dependent hypotension and respiratory depression<sup>3</sup>.

### Material and methods

**Study Design:** Prospective, randomized, double blinded controlled trial. After approval by the research ethics

committee and written informed valid consent of the patients, the proposed study was carried out for a period of one year in 60 patients, in ASA-I and ASA-II patients, aged between 19 to 60 years of either sex, who were posted for laparoscopic cholecystectomy surgery at Indira Gandhi Medical College, Shimla.

**Exclusion Criteria:** patient's refusal, uncontrolled hypertension, laparoscopic cholecystectomies converted to open cholecystectomies, drug allergy.

The patients were randomized into two groups:

**Group P:** Patients received Propofol for induction and maintenance of anaesthesia

**Group KP:** Patients received combination of Ketamine and Propofol for induction and maintenance of anaesthesia. The study drug infusion was prepared by an anaesthesiologist who did not participate in collection of data in that study. Anaesthesiologist who collected data, the

operating surgeon and the patient were blinded to drug infusion.

#### Patient recruitment into the study

All patients underwent a routine pre-anaesthetic check up. During this, thorough history and general physical examination of the patient was carried out. Routine investigations such as haemoglobin, fasting or random blood sugar, blood urea, serum creatinine, serum electrolytes, ECG and chest X-ray were documented.

Study protocol was explained to all the patients during pre-anaesthetic evaluation and informed consent was taken and signed.

The patient was instructed for a fasting period of 6 hrs. Tablet Alprazolam was advised to patient as per department protocol

#### Study Drug:

For induction of anaesthesia: Study drug was given slowly till loss of verbal response

For maintenance of anaesthesia: Study drug was infused at a rate of 50 mcg/kg/min for 10 min and then 25 mcg/kg/min. Study Drug Preparation:

In a 50ml syringe- 50 ml study drug was loaded

- Group P: 50 ml of Propofol 1% (10mg/ml). [1ml of study drug was containing Propofol 10mg]
- Group KP: 40 ml of Propofol 1% (10mg/ml) + 10 ml of Ketamine (10mg/ml).

#### Results

The socio-demographic variable in both groups were comparable.

**Table 1: Comparison of Heart rate of group K at different time intervals**

Duration	Group – K (n=30)		t  <sub>cal</sub>	p-value	Results
	Mean ± S.D				
Baseline	82.80 ± 10.95				
Induction	87.23 ± 12.16		1.483	0.1435	Not Significant
Intubation	89.30 ± 13.22		2.074	0.0425	Significant
IO1	91.30 ± 14.28		2.587	0.0122	Significant
IO2	87.47 ± 12.52		1.538	0.1295	Not Significant
IO3	88.07 ± 11.63		1.807	0.0759	Not Significant
IO5	88.73 ± 11.94		2.005	0.0497	Significant
IO10	89.17 ± 12.53		2.097	0.0404	Significant
IO5	89.77 ± 12.82		2.264	0.0273	Significant
IO5	89.93 ± 12.50		2.350	0.0222	Significant
IO5	90.13 ± 12.42		2.425	0.0185	Significant
Extubate	92.10 ± 10.88		3.30	0.0017	Significant
PO30min	88.17 ± 8.76		2.097	0.0403	Significant
PO1hr	84.23 ± 8.35		0.569	0.5717	Not Significant
PO1hr30min	81.47 ± 7.64		0.546	0.5874	Not Significant
PO 2hr	80.13 ± 7.66		1.094	0.2783	Not Significant

Hence HR for group K was significantly increased during intubation(89.30 ± 13.22) , 1 minute after intubation(91.30 ± 14.28), at 5minute (88.73 ± 11.94) and 10 minute(89.17 ± 12.53) in intraoperative period, every 5 minute before extubation(89.77 ± 12.82,89.93 ± 12.50, 90.13 ± 12.42),during extubation(92.10 ± 10.88) and at first 30 minutes in post operative period(88.17 ± 8.76) as compared to baseline HR(82.80 ± 10.95).

**Table 2: Comparison of Heart rate of group P at different time intervals**

Duration	Group –P (n=30)		t  <sub>cal</sub>	p-value	Results
	Mean ± S.D				
Baseline	76.80 ± 12.55				
Induction	77.43 ± 12.27		0.197	0.8448	Not Significant
Intubation	81.93 ± 10.77		1.699	0.0947	Not Significant
IO1	83.57 ± 11.95		2.140	0.0366	Significant
IO2	80.87 ± 12.95		1.236	0.2214	Not Significant
IO3	81.00 ± 13.12		1.267	0.2102	Not Significant
IO5	81.03 ± 12.92		1.286	0.2035	Not Significant
IO10	80.23 ± 12.50		1.061	0.2933	Not Significant
IO5	80.37 ± 12.64		1.098	0.2768	Not Significant

IO5		80.13 ± 11.08	1.089	0.2805	Not Significant
IO5		80.80 ± 10.89	1.319	0.1925	Not Significant
Extubate		85.80 ± 11.24	2.926	0.0049	Significant
PO30min		82.80 ± 10.56	2.926	0.0049	Significant
PO1hr		80.87 ± 9.06	1.440	0.1552	Not Significant
PO1hr30min		79.90 ± 9.44	1.081	0.2841	Not Significant
PO 2hr		76.77 ± 8.12	0.11	0.9913	Not Significant

Hence HR in group P was significantly increased at 1 min after intubation ( $81.93 \pm 10.77$ ), during extubation ( $85.80 \pm 11.24$ ) and initial 30 minute of postoperative period ( $82.80 \pm 10.56$ ) as compared to baseline HR ( $76.80 \pm 12.55$ ).

### Discussion

We noted the mean heart rate of patients at different time intervals and compared them with the baseline heart rate. In case of group P (Propofol alone) as compared to baseline ( $76.80 \pm 12.55$ ), HR significantly increased at one minute after intubation, during extubation and initial 30 minutes of postoperative period while in case of group K (ketofol) as compared to baseline ( $82.80 \pm 10.95$ ), HR significantly increased during intubation, one minute after intubation, at five minutes and rest of time intervals intraoperatively, during extubation and at first 30 minutes postoperatively.

Hug CC Jr et al.<sup>4</sup> conducted a study to observe hemodynamic effects of propofol in 25,981 patients. In their study in step 1, propofol was used for induction only and in step 2, propofol was used for induction and then maintenance by intermittent injection. In step 3, an induction dose was followed by a maintenance infusion. The overall incidence of bradycardia (heart rate < 50 beats/min) occurred in 4.8% of patients, with 42% of the episodes in the first 10 min. Only 1.3% of patients had both hypotension and bradycardia. Bradycardia was significantly more common when propofol was combined with opioids or when patients were chronically taking beta-adrenergic receptor-blocking drugs. This result was in contrast to the finding in our study where at no time interval bradycardia was noted.

### Conclusion

HR parameter was significantly on higher side in group K during intubation, one -five -10 minutes after intubation, at 15 minutes before extubation, during extubation and at first 30 minutes of postoperative period as compared to group P where it significantly increased at one minute after intubation, during extubation and at initial 30 minutes of postoperative period when compared with their respective baselines

### References

1. Cohen LB, Delegee MH, Aisenberg J, Brill JV, Inadomi JM, Kochman ML, et al. AGA Institute review of endoscopic sedation. *Gastroenterology* 2007; 133: 675-701.
2. McQuaid KR, Laine L. A systematic review and meta-analysis of randomized, controlled trials of moderate sedation for routine endoscopic procedures. *Gastrointest Endosc* 2008; 67: 910-23.
3. Reinhart DJ, Grum DR, Berry J, Lensch D, Marchbanks CR, Zsigmond E. Outpatient general anesthesia: a comparison of a combination of midazolam plus propofol and propofol alone. *J Clin Anesth* 1997; 9: 130-7.
4. Hug CC Jr, McLeskey CH, Nahrwold ML, Roizen MF, Stanley TH, Thisted RA, Walawander CA, White PF, Apfelbaum JL, Grasela TH, et al. Hemodynamic effects of propofol: data from over 25,000 patients. *Anesth Analg*. 1993 Oct;77(4 Suppl):S21-9