VOLUME - 12, ISSUE - 03, MARCH - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Anaesthesiology

EFFECT OF ORAL PREGABALIN WITH FENTANYL VERSUS TRAMADOL DURING LARYNGOSCOPY AND INTUBATION IN PATIENTS UNDERGOING OPEN CHOLECYSTECTOMY UNDER GENERAL ANAESTHESIA: A COMPARATIVE STUDY

Dr Nilotpal Das	Professor And Head
Dr Babita Lahkar	Assoc .Professor
Dr Keshav Upadhyaya	Assistant Professor
Dr Pallab Kalita*	Post Graduate Trainee *Corresponding Author

ABSTRACT **Background:** The present study aims at comparing the efficacy of oral pre-emptive Pregabalin (150 mg) on attenuation of hemodynamic stress response to laryngoscopy and endotracheal intubation in cases of elective open cholecystectomy and comparing effects when used in two different groups-one group receiving iv Fentanyl and the other group receiving iv Tramadol. **Methodology:** 60 subjects were enrolled and by Simple Randomisation, patients were divided into two groups of 30 each, Group A and B. Both groups received Tab Pregabalin 150 mg orally 1.5 hours before surgery with sips of water. Group A received iv. Tramadol 2mg/kg and Group B received iv. Fentanyl 2mcg/kg body weight as analgesic. Hemodynamic responses were recorded. **Results:** The HR, SBP, DBP, MAP were significantly reduced in Pregabalin with Fentanyl group than in Pregabalin with Tramadol group, $p<0.05$. **Conclusion:** This study concludes that oral administration of Pregabalin 150 mg along with iv. Fentanyl 2mcg/kg body weight proved to be an effective combination in blunting the hemodynamic stress response to laryngoscopy and intubation as compared to Pregabalin with tramadol group.

KEYWORDS : Pregabalin, Tramadol, Fentanyl, Hemodynamic responses, laryngoscopy.

INTRODUCTION

Despite significant advances in the art of anaesthetizing a patient, general anaesthesia remains the gold standard for securing an airway. Anaesthesiologist must be proficient in administering anaesthesia to a patient in the safest possible manner[1]. When the airway is manipulated during laryngoscopy, catecholamines are released, which causes tachycardia, hypertension and are mediated by sympathetic chain ganglia and cardio accelerator fibres[2].Endotracheal intubation causes substantial tachycardia and hypertension if it is carried out with only a light plane of anaesthesia[3]. Pregabalin is a drug with analgesic, anticonvulsant, and anti-anxiety actions that is primarily used for the management of neuropathic pain, neuralgia following herpes infection, and as an adjuvant for the treatment of partial onset seizures[4]. In numerous studies Pregabalin premedication has been shown to be highly efficient in decreasing parenteral analgesic dosage and relieving postoperative pain[5].

Pregabalin has been emerging as an effective oral premedication drug with safe and multimodal drug profile with hemodynamic stability[6,7]. The present study aims at comparing the efficacy of oral pre-emptive Pregabalin (150 mg) on attenuation of hemodynamic stress response to laryngoscopy and endotracheal intubation in cases of elective open cholecystectomy and comparing effects when used in two different groups-one group receiving iv Fentanyl and the other group receiving iv Tramadol.

SUBJECT AND METHOD

This prospective, comparative, hospital based, single blinded clinical trial was conducted under the Department of anesthesiology and critical care, Fakhruddin Ali Ahmed Medical college and hospital, Barpeta with due permission and approval from the institutional ethics committee.

Sixty patients with age 20-65 year, ASA physical status I and II and with Modified Mallampati score 1 and 2 undergoing elective open cholecystectomy under general anaesthesia were selected for the study. Patients refused for the procedure, ASA grade III and IV, Mallampatti grade III, IV, coagulopathy, hypovolaemia, body mass index greater than 35 kg/m^2, history of allergy to drugs, patients with liver, renal, cardiovascular disorders, COPD, epilepsy were excluded.

By Simple Randomisation the patients were divided into two groups of 30 each, Group A and B. Both groups received Tab Pregabalin 150 mg orally 1.5 hours before surgery with sips of water. Group A received iv. Tramadol 2mg/kg and Group B received iv. Fentanyl 2mcg/kg body weight as analgesic.

On the night before surgery, tab alprazolam 0.25mg was given orally to each patient. Patients who meet the inclusion criteria are given oral tab Pregabalin 150 mg 1.5 hours before the procedure.

On arrival in the anesthetic room IV line was accessed and Intravenous (IV) infusion was given with Ringer lactate, continuous monitoring with electrocardiogram, NIBP and pulse oximetry were started. Group A received injection tramadol 2mg/kg and Group B received injection fentanyl 2mcg/kg body weight as analgesic 10 minutes before induction.

Preoxygenation done for 3 minutes. All the patients were premedicated with injection glycopyrrolate 0.004 mg/kg, midazolam 0.02 mg/kg, Ketorolac 0.5 mg/kg intravenous. Patients induced with injection propofol 1%(2mg/kg) intravenously until loss of response to verbal stimulus. After that Atracurium (0.5mg/kg) intravenous given to facilitate laryngoscopy and intubation.

Laryngoscopy and intubation done. Muscle relaxation maintained with intermittent intravenous atracurium. Controlled ventilation maintained with 33% oxygen, 66% nitrous oxide and isoflurane inhalation. Paracetamol infusion at dose of 15mg/kg infused as analgesic.

15 minutes before end of surgery, injection ondansetron 0.1 mg/kg was given. At the completion of surgery, residual neuromuscular blockade was antagonized with neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg/kg, and the patient extubated.

Hemodynamic parameters recorded during the basal period (before giving oral pregabalin), preinduction (1.5 hours after administration of oral drug), induction, immediate post intubation, 1 minute after intubation,3,5,10,20,30 and 45 minutes after intubation.

RESULTS:

The demographic characteristics of the patients in terms of age, weight, height, ASA status, duration of the surgery was analysed between the groups and statistical tool did not show any significant variation.

The mean ± SD systolic BP was 126±5.9, 119±6.1, 118±5.0, 140±4.6, 142±4.6, 140±7.8, 138±7.7, 136±5.5, 125±7.3, 126±5.7, 126±4.2 mmHg at base line, preinduction, induction, immediate post intubation,1,3,5,10,20,30,45 minutes respectively in group A and 125±6.5, 116±6.6, 114±5.1, 133±4.5, 136±8, 126±5.9, 126±5.5, 123±4.6, 118±5.9, 124±4.5, 123±3.8 mmHg at base line, preinduction, induction, immediate post intubation,1,3,5,10,20,30,45 minutes respectively in group B. Intraoperative systolic blood pressure in both the group were compared and studied with unpaired t test and p values were .096, .072, .069, .001, .001, .001, .001,.001, .056, .067, .093 at base line, preinduction, induction, immediate post induction,1,3,5,10,20,30,45 minutes respectively.

The mean ± SD diastolic BP was 87±4.2, 82±4.2, 85±4, 100±4.1, 101±4.1, 100±4, 90±3.5, 88±3.5, 92±4, 87±4.3, 88±7 mmHg at base line, preinduction, induction, immediate post intubation,1,3,5,10,20,30,45 minutes respectively in group A and 87±4.8, 79±4.70, 78±4.9, 88±3.6, 92±5.5, 90±5.3, 82±5, 84±4.8, 84±5.6, 80±4.5, 84±4 mmHg at base line, preinduction, induction, immediate post induction,1,3,5,10,20,30,45 minutes respectively in group B with P value .092, .083, .084, .001, .001, .001, .001,.001, .034, .641, .053 respectively.

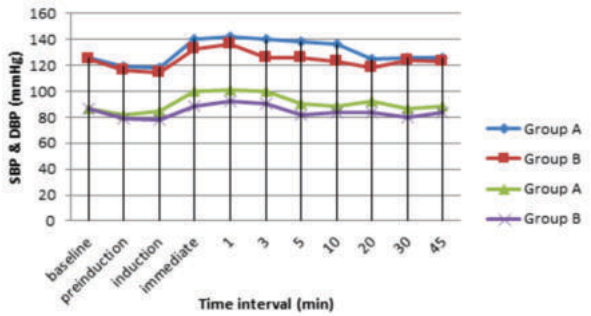

Fig 1: Line: Graph showing distribution of patient groups with respect to systolic and diastolic blood pressure.

The mean ± SD MAP was 95±4.4, 92±4.5, 90±3.8, 94±4.1, 104±3.5, 97±5, 94±4.5, 93±3.8, 90±4.6, 92±3.5, 92±4.8 mmHg at base line, preinduction, induction, immediate post intubation,1,3,5,10,20,30,45 minutes respectively in group A and 93±4.4, 91±3.90, 89±3.8, 92±2.7, 95±4.9, 93±4.3, 90±4.1, 90±3.6, 88±4.1, 86±3, 90±3 mmHg at base line, preinduction, induction, immediate post induction,1,3,5,10,20,30,45 minutes respectively in group B with P value .086, .062, .091, .003, .001, .001, .001,.002, .004, .001, .672 respectively.

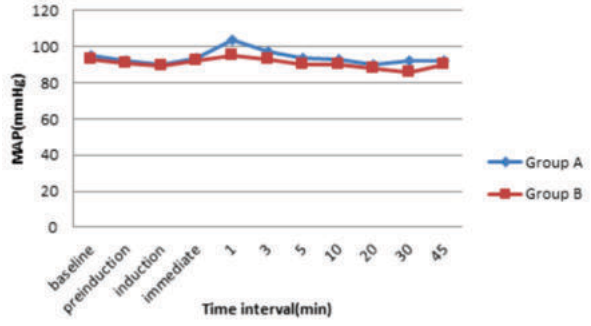

Fig 2: Line graph showing distribution of patient groups with respect to mean arterial pressure.

The mean ± SD heart rate was 87±7.1, 88±5.4, 88±8.3, 92±6.3, 100±6.2, 99±7.2, 98±6.7, 95±5.4, 94±6.8, 88±7.3, 84±6.4 mmHg at base line, preinduction, induction, immediate post induction,1,3,5,10,20,30,45 minutes respectively in group A and 88±6.2, 89±5.9, 87±6.4, 88±5.7, 90±5.6, 87±6, 98±6.1, 86±6.4, 84±6.5, 80±7.2, 82±5.5 mmHg at base line, preinduction, induction, immediate post induction,1,3,5,10,20,30,45 minutes respectively in group B with P value .054, .063, .077, .009, .002, .001, .001,.001, .001, .036, .064 respectively.

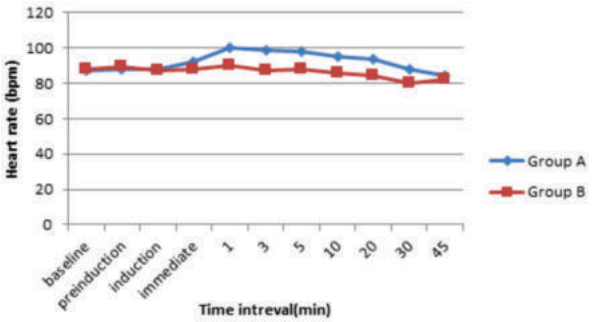

Fig 3: Line diagram showing distribution of patient groups with respect to heart rate.

DISCUSSION:

SBP, DBP, MAP, HR at baseline, Preinduction, and Induction was statistically similar in both the group, $p>0.05$. In both the groups, haemodynamic parameters started rising immediately after intubation and continued to raise till 1 minute. In group A, SBP was significantly higher in comparison to Group B from Immediate post intubation to 10 Minutes post intubation, $p<0.05$, while DBP was significantly higher in group A compared to group B till 20 minutes post intubation and significant difference in MAP was seen till 30 minutes. In group A, HR was significantly higher in comparison to Group B from Immediate post intubation to 20 Minutes post intubation, $p<0.05$. Both the groups maintained SPO2 equally with no significant difference at any time point. Group B was observed to be significantly able to attenuate SBP, DBP, MAP, HR in comparison to Group A. Pravinkumaar R et al[8] conducted a study on 60 patients to find the effect of pregabalin with respect to haemodynamic attenuation during intubation. Tab Pregabalin 300mg was given 90 minutes prior to intubation. They concluded that pregabalin group had significantly lower MAP at intubation than the placebo group. Gupta K et al[9] conducted a study in which tab Pregabalin 150 mg or placebo capsules were given orally 60–75 minutes before surgery and stated that pregabalin successfully attenuated the adverse and deleterious hemodynamic pressor response. Pang WW et al[10] conducted a study comparing Tramadol and Fentanyl. In this study, differences in baseline values were not significant, nor were the differences in the values following induction. After laryngoscopy and intubation, heart rate increased significantly above the baseline level in both groups. The increase of heart rate was significantly more at 6 and 9 min ($P < 0.05$) and lasted longer in the tramadol group. After intubation, systolic, mean and diastolic arterial pressure (SBP, MAP, DBP) increased significantly above baseline in both groups, except for DBP in fentanyl group. At 6 and 9 min, the MAP and DBP were significantly higher in tramadol than in fentanyl group ($P < 0.05$). They concluded that when administered right before thiopental induction, 3 mg/kg tramadol did not display a better attenuation against the increase of hemodynamic profiles than did 3 micrograms/kg fentanyl following tracheal intubation

CONCLUSION:

Laryngoscopy and tracheal intubation are considered to be the most noxious stimuli which can lead to adverse hemodynamic pressor response especially in cardiovascular

compromised patients, necessitating the need for attenuating the pressor responses. The present study compared the efficacy of oral pre-emptive Pregabalin (150 mg) on attenuation of hemodynamic stress response to laryngoscopy and endotracheal intubation for elective open cholecystectomy in two different groups. The heart rate, systolic blood pressure, diastolic blood pressure, Mean Arterial Pressure were significantly reduced in Pregabalin with Fentanyl group than in Pregabalin with Tramadol group. Hence oral administration of Pregabalin 150 mg along with iv. Fentanyl 2mcg/kg body weight proved to be an effective combination in blunting the hemodynamic stress response to laryngoscopy and intubation.

REFERENCE

1. Mulcaster JT, Mills J, Hung OR, Kirk Macquarrie JA, Law S, Pytka D. Chris Field; Laryngoscopic Intubation: Learning and Performance. Anesthesiology. 2003;98:23–7.
2. Bucx MJ, van Geel RT, Scheck PA, Stijnen T. Cardiovascular effects of forces applied during laryngoscopy. The importance of tracheal intubation. Anaesthesia [Internet]. 1992;47(12):1029–33.
3. Billard V, Servin F. Light or deep general anaesthesia: does it matter and how to assess it?. European journal of anaesthesiology. 2008 Oct;25(10):781-3.
4. Field MJ, Oles RJ, Singh L. Pregabalin may represent a novel class of anxiolytic agents with a broad spectrum of activity. Br J Pharmacol [Internet]. 2001;132(1):1– 4.
5. Durkin B, Page C, Glass P. Pregabalin for the treatment of postsurgical pain. Expert opinion on pharmacotherapy. 2010 Nov 1;11(16):2751-8.
6. Singh D, Yadav JS, Jamuda BK, Singh P. Oral pregabalin as premedication on anxiolysis and stress response to laryngoscopy and endotracheal intubation in patients undergoing laparoscopic cholecystectomy: A randomized double-blind study. Anesth Essays Res [Internet]. 2019;13(1):97–104.
7. Sisa K, Huoponen S, Ettala O, Antila H, Saari TI, Uusalo P. Effects of pre-emptive pregabalin and multimodal anesthesia on postoperative opioid requirements in patients undergoing robot-assisted laparoscopic prostatectomy. BMC urology. 2021 Dec;21(1):1-8.
8. Pravinkumaar, Aswini, Uma, Chavan S. Effect of Oral Pregabalin as a Premedicant on Haemodynamic Response to Laryngoscopy and Intubation. Int J Curr Res Rev. 2021Aug;13(16):24–9.
9. Gupta K, Bansal P, Gupta PK, Singh YP. Pregabalin premedication-A new treatment option for hemodynamic stability during general anesthesia: A prospective study. Anesthesia, essays and researches. 2011 Jan;5(1):57.
10. Pang WW, Lei CH, Chang DP, Tung CC, Huang MH. The effects of tramadol versus fentanyl in attenuating hemodynamic response following tracheal intubation. Acta Anaesthesiologica Sinica. 1999 Dec 1;37(4):191-6.