

Original Article

Compare the Effectiveness in Term of Attenuating Stress Response between Oral Pregablin and Intravenous Lignocaine in Patients with Hypertension

Oral Pregablin
and IV
Lignocaine in
Patients with
Hypertension

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ABSTRACT

Objective: To compare the efficacy of oral pregablin with intravenous lignocaine in term of attenuating pressor response in patients presented with hypertension.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the Main Operation Theatre DHQ Teaching Hospital/ Gujranwala Medical College, Gujranwala and Anaesthesia Department PIC, Lahore from October 2019 to February 2020.

Materials and Methods: One hundred and four hypertensive patients of both genders with ages 20 to 65 years undergoing elective surgeries were enrolled in this study. All the patients were equally divided into two groups, each group contains 52 patients. Group I received oral pregablin and group II received IV lignocaine. Heart rate, systolic BP and diastolic BP were examined before and after intubation between both groups.

Results: No significant difference was observed between both groups regarding age, sex and body mass index (BMI) with p-value >0.05. Before intubation no significant difference was observed regarding heart rate, systolic and diastolic BP. A significant lower heart rate was found in group I after intubation 91.28 ± 12.66 beat/min as compared to group II 97.86 ± 13.44 (p-value <0.05). In group I mean systolic BP and diastolic BP after intubation were significantly lower than the group II with p-value <0.05.

Conclusion: Oral pregablin had better efficacy for attenuating stress response as compared to intravenous lignocaine in patients with hypertension.

Key Words: Hypertension, Intubation, Stress response, Pregablin, Lignocaine, Elective surgery

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INTRODUCTION

Endotracheal intubation is considered an integral part of the anesthesiologist's contribution in patient care. However, it is an oxious stimulus that may initiate a transient sympathetic response in the form of increased heart rate, blood pressure, and arrhythmias. Moreover, this response may be marked in some cases.¹

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Patients with systemic hypertension generally exhibit exaggerated response during laryngoscopy and intubation.^{2,3} Stress response is usually transient and is well tolerated in healthy individuals without any significant effects. But in certain population with comorbid conditions like coronary artery disease and hypertension the response can result in adverse events like myocardial infarction and arrhythmias.

Some of the methods by which the stress response can be minimized are by using judicious premedication, performing intubation in a deeper plane, gentle laryngoscopy, avoiding laryngeal manipulation and with drugs like beta blockers, opioids, calcium channel blockers, vasodilators and alpha agonists just before intubation. Among the pharmacological methods lignocaine is the widely used drug. Gaba pentinoids, derivatives of gamma aminobutyric acid (GABA) have been primarily used for neuropathic pain, as well as various off-label indications.^{5,6} Pregabalin is a structural analogue of gaba pentinwithan additional advantage of having bioavailability of 90% compared to 60% of gaba pentini.^{7,8} After oral administration peak levels are achieved within one hour. We

conducted present study to compare the efficacy between oral pregablin and intravenous lignocaine for attenuating stress response in patients with hypertension.

MATERIALS AND METHODS

This randomized controlled trial was conducted at Main Operation Theatre DHQ Teaching Hospital/ Gujranwala Medical College, Gujranwala and Anaesthesia Department PIC, Lahore from 1st October 2019 to 29th February 2020. A total of 104 hypertensive patients of both genders with ages 20 to 65 years undergoing elective surgeries were enrolled in this study. Patient's detailed demographics including age, sex, and body mass index were recorded. Pregnant women, patients with anticipated difficult airway, patients with cardiac issues, neurological disorder and those with no consent were excluded. All the patients were equally divided into two groups, each group contains 52 patients. Group I received oral pregablin 150 mg before surgery and group II received IV lignocaine 1.5 mg/kg before intubation. Heart rate, systolic BP and diastolic BP were examined before and after intubation at 1, 5 and 10 minutes between both groups. Hemodynamic change in stress response parameters were examined. All the data was analyzed by SPSS 24. Chi-square test was done to compare the findings between both groups and p-value <0.05 was taken as significant.

RESULTS

There were 30 (57.69%) male and 22 (42.31%) female with mean age 35.26 ± 10.48 years in group I, in group II 27 (51.92%) patients were male and 25 (45.08%) were females with mean age 36.44 ± 9.06 years. Mean BMI in group I was 25.63 ± 3.24 kg/m² and in group II it was 25.35 ± 3.86 kg/m². No significant difference was observed between both groups regarding age, gender and BMI with p-value >0.05 (Table 1). According to the heart rate, no significant differences was observed at baseline (p-value >0.05), a significant decrease was found at 1, 5 and at 10 minute in both groups with p-value <0.05. Patients received oral pregablin had significantly lower heart rate at 1, 5 and at 10 minute as compared to patients received intravenous lignocaine [p<0.05] (Table 2). According to the systolic BP, no significant differences was observed at baseline (p-value >0.05), a significant decrease was found at 1, 5 and at 10 minute in both groups with p-value <0.05. Patients received oral pregablin had significantly systolic BP rate at 1, 5 and at 10 minute as compared to patients received intravenous lignocaine [P<0.05] (Table 3)

According to the diastolic BP, no significant differences was observed at baseline (p-value >0.05), a significant decrease was found at 1, 5 and at 10 minute in both

groups with p-value <0.05. Patients received oral pregablin had significantly lower diastolic BP rate at 1, 5 and at 10 minute as compared to patients received intravenous lignocaine [P<0.05] (Table 4). We found none of the patient has suffered from any post-operative side-effects, and no significant differences in the parameters of recovery and awakening time were observed.

Table No.1: Demographics of all the patients

Variable	Group I	Group II
Age (years)	35.26±10.48	36.44±9.06
BMI (kg/m)	25.63±3.24	25.35±3.86
Gender		
Male	30 (57.69)	27 (51.92)
Female	22 (42.31)	25 (48.08)

P-value >0.05(not significant)

Table No.2: Comparison of heart rate between both groups

Variables	Group I	Group II	P-value
Baseline	85.25±9.66	86.07±8.53	>0.05
At 1 Minute	91.28±12.66	97.86±13.44	<0.001
At 5 Minute	83.54±10.25	92.73±11.48	<0.001
At 10 Minutes	79.86±8.36	87.74±9.36	<0.001

Table No.3: Comparison of systolic BP between both groups

Variables	Group I	Group II	P-value
Baseline	130.32±10.56	131.03±9.42	>0.05
At 1 Minute	120.64±12.42	126.84±11.14	<0.001
At 5 Minute	112.73±8.48	121.76±10.22	<0.001
At 10 Minutes	107.52±7.74	115.02±8.93	<0.001

Table No.4: Comparison of diastolic BP between both groups

Variables	Group I	Group II	P-value
Baseline	84.16±8.84	85.32±8.35	>0.05
At 1 Minute	71.82±7.42	78.45±9.44	<0.001
At 5 Minute	65.55±6.56	72±11.48	<0.001
At 10 Minutes	64.28±7.86	70.43±8.47	<0.001

DISCUSSION

Haemodynamic pressor response to airway instrumentation (direct laryngoscopy and intubation) is a hazardous complication of general anaesthesia. Many pharmacological techniques were evaluated either in the premedication or during the induction to attenuate these adverse haemodynamic responses to

airway instrumentation, such as deepening the anaesthesia, pre-treatment with vasodilators, adrenoceptor blockers, calcium channel blockers and opioids, with variable results.^{10,11} We conducted present study to compare the efficacy of oral pregablin and IV lignocaine for attenuating stress response in patients with stage-1 hypertension. In this regard 104 patients of both genders whom were undergoing elective surgeries under general anaesthesia were analyzed. Patients were divided equally in to two groups, group I received oral pregablin one hour before surgery and other group received IV lignocaine before intubation. Majority of patients in both groups were male 57.69% and 51.92% as compared to females 42.31% and 48.08%. Mean age of pregablin group patients was 35.26±10.48 years and in lignocaine group it was 36.44±9.06. No significant difference was observed between both groups regarding gender, age and body mass index with p-value >0.05. These results were comparable to previous studies in which majority of patients were male 55% to 65% as compared to females and average age of patients was 30 years whom were undergoing elective surgeries under general anaesthesia.^{12,13}

In present study we found that patients whom were received pregablin had better attenuated stress response as compared to IV lignocaine. We found that According to the heart rate, systolic and diastolic BP no significant differences was observed at baseline (p-value >0.05), a significant decrease was found at 1, 5 and at 10 minute in both groups with p-value <0.05. Patients received oral pregablin had significantly lower heart rate, systolic BP and diastolic BP at 1, 5 and at 10 minute as compared to patients received intravenous lignocaine (p-value <0.05). A study conducted by Abd-Allah et al¹⁴ regarding efficacy in term of stress response of oral gabapentin for patients undergoing intracranial surgery, in their study 70 patients were analyzed and the results showed that gabapentin effectively attenuated blood pressure, heart rate, and catecholamine levels compared to the placebo after intubation.

A randomized controlled trial by Reddy et al¹⁵ regarding efficacy of pregablin in attenuating the adverse haemodynamic response to laryngoscopy, In which they demonstrated that pregablin before surgery was very effective for controlling the adverse haemodynamic parameters. Patients received oral pregablin had lower heart rate, systolic and diastolic BP as compared to clonidine Another study conducted by Vadhanan et al¹⁶ conducted study regarding comparison the effectiveness of oral pregablin with intravenous lignocaine for attenuating stress response in hypertension patients, 60 patients were analyzed, 30 patients received oral pregablin and 30 received intravenous lignocaine before intubation and the study showed that pregablin group had significantly lower heart rate, systolic and diastolic BP as compared to lignocaine group.

Many of previous studies demonstrated that premedication with gabapentin and pregablin showed higher efficacy for attenuating stress response as compared to intravenous medication.^{17,18}

CONCLUSION

Oral pregablin had higher efficacy for attenuating stress response as compared to intravenous lignocaine. Oral pregablin had significantly lower heart rate, systolic and diastolic blood pressure when compared to IV lignocaine.

Author's Contribution:

Concept & Design of Study: Faiqa Qurban
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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