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RESEARCH ARTICLE

A STUDY OF COMPARING THE EFFECTS OF ORAL CLONIDINE AND ORAL GABAPENTIN ON PREOPERATIVE ANXIOLYSIS AND ATTENUATION OF STRESS RESPONSE TO LARYNGOSCOPY AND ENDOTRACHEAL INTUBATION

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Introduction : surgical procedures can lead to severe anxiety and stress in patients scheduled for surgery. Anxiety can cause stimulation leads to cardiovascular changes. Use of certain drugs like GABA mimetic like gabapentin are effective in control of anxiety. This will cause decrease in the level of cathacolamine release from adrenal gland cremafinn cell.

Aims and objectives : To assess the level of the anxiety of the patient, to assess the level of the sedation levels of the patients, and to assess the hemodynamic responses produced by the body of the patients .

Material and methods : This Prospective – Randomized study was conducted in the Anaesthesia Department in Rama Medical College Hospital and research centre, Kanpur from 25TH AUGUST 2022 TO 25TH MARCH 2024. The study was done on 120 patients who participated in the study. The samples were divided into two groups, 60 in each group, Group C (received clonidine) and Group G (received Gabapentin). Baseline vital signs such blood pressure, pulse rate, respiration rate, and oxygen saturation were recorded and these were recorded again after the intubation. **Result :** Anxiety score was significantly better in clonidine (group C) as compared with gabapentin (group G). Patient who received Gabapentin have more raise in SPO_2 level than clonidine. Oral Gabapentin attenuated increase in heart rate, SPO_2 and MAP than oral gabapentin.

Conclusion : showed that oral clonidine can be used safely and efficiently to obtund the hemodynamic alterations related with laryngoscopy and endotracheal intubation. It was discovered that clonidine was more successful than gabapentin at reducing hemodynamic reactions to the procedures of intubation and laryngoscopy.

Key Words: *Clonidine, gabapentin, laryngoscopy, endotracheal intubation, anxiety, sedation.*

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INTRODUCTION

surgical procedures can lead to severe anxiety and stress in patients scheduled for surgery. Anxiety can always trigger and lead to increase in stressful conditions, leading to the activation and release of the activities of autonomic nervous system[1,2]. when the patient is scheduled for doing laryngoscopy and surgical procedures causing stimulation leads to cardiovascular changes[3-6]. The myocardial ischemic changes which are happening because of the response generated due to reflex produced after laryngoscopy and intubation it is produced by sympathetic and adrenal system.[7-10] even also in the patients who are normotensive, can result in an average increase in the blood pressure (SBP) by approx 40 mmHg.[11,12]

Use of certain drugs like GABA mimetic like gabapentin are effective in control of anxiety and the response produced due to the intubation and laryngoscopy procedure drugs like gabapentin are also helpful in controlling the stress 8 and in result this will cause decrease in the level of cathacolamine release from adrenal gland cremafinn cell[13-15].

MATERIAL AND METHOD

This Prospective – Randomized study was conducted in the Anaesthesia Department in Rama Medical College, Kanpur from 25TH AUGUST 2022 TO 25TH MARCH 2024 on 120 patients who participated in the study. The samples were divided into two groups, 60 in each. Demographic data of each patient was recorded. The medications are administered to the patients with sips of water ninety min prior to the operation. Baseline vital signs such blood pressure, pulse rate, respiration rate, and oxygen saturation were recorded. Patients are first given Inj. Midazolam 1 mg iv in addition to this, Injection Glycopyrrolate 0.2mg iv and Injection, Fentanyl 2µg/kg were also given. The patients were oxygenated with 100% oxygen for three minutes. Injection of propofol (2 mg/kg) or the min. dose necessary to cause loss of all verbal commands is used for induction. To aid with laryngoscopy and intubation, 2 mg/kg of succinyl choline is administered. Following surgery, injections of glycopyrrolate (0.01 mg/kg) and neostigmine (0.05 mg/kg) are used to relieve any residual muscular blockage. After surgery, the patients are observed for any side symptoms, including headaches, nausea, vomiting, and dizziness, which are then appropriately managed in the postoperative intensive care unit

Inclusion criteria: Patients between the ages of 18 and 60 who are scheduled for elective general anesthesia surgery.

Exclusions criteria: Patients denying to take part in study. Patients who were below 18 years & above 60 years. The patients who were Anticipation of difficult intubation. Patients who were Chronically diseased and psychiatric illnesses patient.

RESULT

Age, Sex, classification by ASA-PS, length of intubation, and length of operation were similar in both the study groups, and the p-value between these groups indicated that there was no statistically significant difference.

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	BASELINE		P VALUE
GROUP	BASELINE SEDATION SCORE	BEFORE INDUCTION SEDATION SCORE	P VALUE (PAIRED T TEST)
GROUP C	1.00 ± 0.00	0.50 ± 0.57	<0.001
GROUP G	1.00 ± 0.00	0.67 ± 0.48	<0.001

Table 1 : Comparison of demographic data between the two groups :

Parameters		**Group (C)**	**Group (G)**	**p value**
Age in years (Mean ± SD)		32.27 ± 12.43	33.90 ± 8.13	0.396
Surgery duration (Mean ± SD)		83.58 ± 31.78	91.83 ± 30.36	0.141
ASA PS	ASA I	34	31	0.583
	ASA II	26	29	
Sex	Male	30	35	0.360
	Female	30	35	
Duration of Intubation		26.93 ± 2.58	26.67 ± 2.62	0.599

Table 2 : Distribution of anxiety score within two group

Table 3 : Distribution of sedation score within two group

Table 4 : Comparison of heart rate between the two groups

HEART RATE	GROUP C (N=60)	GROUP G (N=60)	P VALUE (UNPAIRED T TEST)
	MEAN ± SD	MEAN ± SD	
BASELINE	81.10 ± 4.02	82.03 ± 5.76	0.305
BEFORE INDUCTION	80.40 ± 3.95	82.00 ± 5.51	0.070
DURING INTUBATION	86.27 ± 3.89	91.72 ± 5.67	**<0.001**
1 MINUTE AFTER INTUBATION	85.67 ±3.90	90.93 ± 5.49	**<0.001**
3 MINUTES AFTER INTUBATION	83.83± 3.65	88.85± 5.60	**<0.001**
5 MINUTES AFTER INTUBAT	82.45 ± 4.02	87.50± 5.69	**<0.001**

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ION			
10 MINUTES AFTER INTUBATION	80.20± 4.13	82.67± 5.50	**0.006**

Table 5 : Comparison of mean arterial pressure between the two groups

MAP	GROUP C (N=60) MEAN ± SD	GROUP G (N=60) MEAN ± SD	P VALUE (UNPAIRE T TEST)
BASELINE	91.53 ± 4.29	90.83 ± 4.60	0.391
BEFORE INDUCTION	91.23 ± 4.01	89.73 ± 4.71	0.063
DURING INTUBATION	94.26 ± 2.65	97.54 ± 3.67	**<0.001**
1 MINUTE AFTER INTUBATION	94.01 ± 3.05	96.12 ± 4.11	**0.002**
3 MINUTES AFTER INTUBATION	93.00 ± 3.49	95.42 ± 3.28	**<0.001**
5 MINUTES AFTER INTUBATION	91.71 ± 3.39	93.76 ± 3.67	**0.002**
10 MINUTES AFTER INTUBATION	91.22 ± 3.82	90.28 ± 4.21	0.206

Table 6 : Comparison of SPO_2 between the two groups

SPO2	GROUP C (N=60) MEAN ± SD	GROUP G (N=60) MEAN ± SD	P VALUE (UNPAIRED T TEST)
BASELINE	98.97 ± 0.18	98.92 ± 0.28	0.246
BEFORE INDUCTION	98.90 ± 0.35	98.93 ± 0.55	0.693
DURING INTUBATION	99.37 ± 0.49	99.42 ± 0.50	0.549
1 MINUTE AFTER INTUBATION	99.45 ± 0.50	99.45 ± 0.50	1.0
3 MINUTES AFTER INTUBATION	99.40 ± 0.49	99.48 ± 0.50	0.362
5 MINUTES AFTER INTUBATION	99.50 ± 0.50	99.45 ± 0.50	0.587
10 MINUTES AFTER INTUBATION	99.68 ± 0.47	99.63 ± 0.49	0.567

Table 1 shows the distribution of age, sex, duration of surgery, duration of intubation, ASA PS in two groups, which were statistically comparable.

Anxiety score was compared before and after the administration of drugs in Table 2. However, anxiety score was significantly better in clonidine (group C) as compared with gabapentin (group G)

In Table 3, Sedation score was compared before and after the administration of drugs. The result shows that the mean and standard deviation is equal in both groups.

The 4th table is showing the comparison of both groups based on the changes in heart rate. The heart rate was measured before, during and after the intubation in a fixed interval. Heart rate (Table 4) in clonidine (group C) remained below base line at all times. Whereas in gabapentin (group G) the heart rate rise persisted until the end of study period.

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Similarly mean arterial pressure (Table 5) also attenuated in group C and it remained above baseline till 10 minutes after intubation. This rise in MAP was significant but did not need any active intervention. In group G also rise in MAP was observed at all times except at 1 minute following intubation when rise in MAP was observed.

Table 6 shows the comparison of Group C and Group G based on their SPO_2 level. It shows a gradual increase in both Group C and Group G. Patient who received Gabapentin (group G) have more raise in spo_2 level than clonidine (group C).

DISCUSSION

Prior to surgery, anxiety is more common in patients, and this, along with the stress of being intubated, can cause undesirable increases in heart rate and mean arterial pressure. This study compares the effectiveness of two medications, notably gabapentin and clonidine, that are administered orally 90 minutes before surgery in terms of drowsiness, lowering patient anxiety.

Clonidine and gabapentin are drugs under intense investigation as an adjunct to anesthesia in various forms.. Clonidine improves the quality of induction, maintenance and recovery of anesthesia. By its central sympatholytic action, it tends to attenuate the hemodynamic response to any surgical nociceptive stimulus and improve overall perianesthetic cardiovascular stability. Similarly, gabapentin most recently has been evaluated as an analgesic, anti-hyperalgesic when used perioperatively. Role of gabapentin in obtunding hemodynamic response has been highlighted by Fassoulaki et al and Memis et al.[16,17]

Our study revealed that both clonidine and gabapentin showed anxiolysis and sedation in a significant proportion of subjects. This is supported by the study of Faheim et al.[18] who used clonidine 300 mcg and gabapentin 600 mg.

In the present study, the systolic blood pressure rose during intubation and at the one-, three-, and five-minute mark afterward. Individuals in Group G have increased more than those in Group C, though. This rise in MAP was significant but did not need any active intervention. In group G also rise in MAP was observed at all times except at 1 minute following intubation when rise in MAP was observed. This was found to be statistically significant. This is supported by a study done by Marashi et al.[19] in which comparative evaluation of two drugs both clonidine and gabapentin are equally effective in attenuating BP response to laryngoscopy and intubation.

CONCLUSION

oral clonidine can be used safely and efficiently to obtund the hemodynamic alterations related with laryngoscopy and endotracheal intubation.
It was discovered that clonidine was more successful than gabapentin at reducing hemodynamic reactions to the procedures of intubation and laryngoscopy.

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