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A COMPARISON OF CLONIDINE WITH LIGNOCAINE IN PATIENTS UNDERGOING GENERAL ANESTHESIA ELECTIVELY

Anaesthesiology

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ABSTRACT

Background and objective- Laryngoscopy and tracheal intubation are of paramount importance during conduct of general anaesthesia. The common accompaniment of these procedures is sympathetic stimulation and hyperdynamic response. To compare Lignocaine and Clonidine in attenuation of pressor response to laryngoscopy and intubation with respect to the following- Effect on cardiac rate, Effect on blood pressure.

METHODOLOGY-All noninvasive monitoring was done.

INDUCTION AND MAINTENANCE was done as per protocol.with drugs like glycopyrolate,midazolam,fentanyl,thiopentone.

Conclusion- we recommend Inj Lignocaine 1.5 mg/kg to be used more frequently as a premedication in patients undergoing elective surgery under general anesthesia and we need to increase the dose of clonidine for complete blunting of intubation response.

KEYWORDS

LIGNOCAINE,CLONIDINE

INTRODUCTION

The anatomical and physiological understanding of the laryngoscopic response reveals that the hemodynamic changes are due to reflex sympathetic discharge caused by epipharyngeal and laryngopharyngeal stimulation.[1] This increased sympatho-adrenal activity may result in hypertension, tachycardia and arrhythmias.[2,3] The increase in blood pressure and heart rate are usually transitory, variable and unpredictable.

Many pharmacological methods have been devised to reduce the extent of hemodynamic events including high dose of opioid,[4] local anesthetics like lignocaine,[5] alpha and beta adrenergic blockers[6,7] and vasodilatation drugs like nitroglycerine.[8] Topical anesthesia with lignocaine applied to the larynx and trachea in a variety of ways remains a popular method used alone or in combination with other techniques.

In this randomized, double-blind, prospective study, iv clonidine 1mcg/kg and iv lignocaine 1.5mg/kg is compared in terms of reduction in response to laryngoscopy and intubation.

AIMS AND OBJECTIVES

1 To compare hemodynamic response of laryngoscopic intubation following intravenous clonidine or intravenous lignocaine in different sets of patients .

1. To study the efficacy of Lignocaine for attenuation of hemodynamic response during laryngoscopy and intubation.
2. To study the efficacy of Clonidine for attenuation of hemodynamic response during laryngoscopy and intubation.
3. To compare Lignocaine and Clonidine in attenuation of pressor response to laryngoscopy and intubation with respect to the following.

- Effect on cardiac rate
  Effect on blood pressure

MATERIAL AND METHODS:

TYPE OF STUDY:- Randomized, prospective, double blinded study.

PATIENT SELECTION :-Study population was chosen from amongst the patients admitted in the hospital for elective surgery under general anesthesia requiring endotracheal intubation keeping the following criteria in view :

INCLUSION CRITERIA:-

Patients aged between 18-45 years with ASA Grade I or II.and randomization was done on bases ofcomputer generated after informed consent undergoes elective surgery under GA.

EXCLUSION CRITERIA:-

patients with ASA III-IV, Difficult intubation, drug abuser, taking α-blocker, antidepressant, antianxiety or who undervent Emergency surgical procedures,or hypersensitivity to any drug.

Group C (Clonidine group) will be given IV clonidine – 1 mcg/kg diluted in 100ml of normal saline given over 15 minutes, 15 minutes prior to laryngoscopy and intubation and 5 ml of distilled water in a syringe 3 minutes before laryngoscopic intubation.

Group L (Lignocaine group) will be given 100ml of normal saline iv over 15 minutes, 15 minutes prior to laryngoscopy and intubation and iv lignocaine 1.5 mg/kg.bw diluted to 5 ml with distilled water in a syringe 3 minutes before laryngoscopic intubation .

All noninvasive monitoring was done. INDUCTION AND MAINTENANCE: was done as per protocol.with drugs like glycopyrolate,midazolam,fentanyl,thiopentone .

"Intubation Duration".and intubation response noted as per according to guideline.

PLAN FOR ANALYSIS OF DATA:

Statistical analysis is performed by using SPSS stastical software version 13.0. Values of continuous variables are expressed as mean ± standard deviation (SD). Data for qualitative variables are analyzed by using chi-square test or Fischer's exact test as appropriate. All quantitative variables such as age, height weight, all hemodynamic variables are compared by independent sample t-test. $P < 0.05$ is considered as statistically significant.

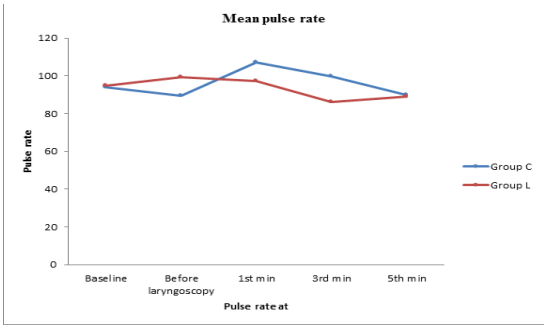
OBSERVATION AND RESULTS:

This study comprises of 60 patients (ASA < III) between age group of18 to 45 yrs of either sex. The patients were divided in 2 groups of 30 each.

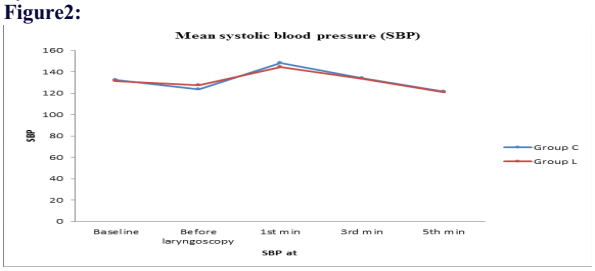
DEMOGRAPHIC CHARACTERISTICS: like age ,sex, weight,and ASA grade were comparable in both the groups.

Hemodynamics

Heart Rate Variation: figure-1



Systolic Blood Pressures
Figure2:



Diastolic Blood Pressures
Table 3:

DBP at	Number of patients	DBP (Mean ± SD)	p-value	
		Group C	Group L	
Baseline	30	81.47 ± 5.64	80.33 ± 7.42	0.508
Immediate post operative	30	78.83 ± 5.94	91.57 ± 7.50	< 0.001
1st min	30	99.50 ± 6.65	94.27 ± 6.41	0.003
3rd min	30	85.70 ± 7.13	86.17 ± 6.45	0.791
5th min	30	78.90 ± 7.26	77.37 ± 6.83	0.403

Mean arterial pressure (MAP)
Table 4:

MAP at	Number of patients	MAP (Mean ± SD)	p-value	
		Group C	Group L	
Baseline	30	98.45 ± 4.88	97.26 ± 7.33	0.463
Before Laryngoscopy	30	93.80 ± 4.95	103.47 ± 7.17	< 0.001
1st min	30	115.73 ± 5.16	110.94 ± 6.30	0.002
3rd min	30	101.90 ± 5.67	102.03 ± 5.75	0.928
5th min	30	93.09 ± 5.67	91.83 ± 6.75	0.438

DISCUSSION:

Although few studies have failed to prove the attenuating effect of Lignocaine, it is still the most preferred agent. It has direct myocardial depressant action, a peripheral vasodilating effect and suppression of cough reflex.[9] This study has been planned to observe the effect of intravenous clonidine on laryngoscopic intubation response and the results compared with that of intravenous lignocaine.

Stanly T et al[10] concluded that intravenous lignocaine 1.5mg/kg attenuates increases in heart rate and blood pressure when given 3 minute before intubation.

Abou-Modi et al[11] found that 1.5 mg/kg dose offered complete protection against cardiovascular response to laryngoscopy and tracheal intubation arrhythmias as against a smaller dose of 0.75 mg/kg.

Anila D Malde et al[12] found that single bolus dose of IV Fentanyl (2µg/kg) is better than IV Lignocaine (1.5mg/kg) for attenuation of intubation response .In our study we used Inj Linocaine 1.5 mg/kg ,3 min before intubation and above two studies support our study.

Various authors Wright P.M.C. et al[13]., Leslie K. et al[14]., Carabine U.A. et al[15]., Marinangeli F. et al[16]., Kock MD. et al.[17], Altan. A. et al[18], Ray M. et al[19].,and Tripathi DC. et al[20]. have employed clonidine 15 minutes before intubation.

In view of the above,in the present study clonidine was employed 15 minutes before laryngoscopy and intubationto blunt the haemodynamic response.

the base line mean HR were comparable in both groups before intubation .HR was significantly higher in clonidine group after one min.of intubation (107.30±8.33) compared to GROUP L (97.17±09.66) p value<.05.
In our study, in lignocaine group no significant rise in HR was present after ETI;. We injected lignocaine 3 minutes before intubation.

SYSTOLIC, DIASTOLIC AND MEAN BLOOD PRESSURE (mHg)

Systolic Blood Pressure (mmHg)

In the present study, both the groups were comparable with respect to baseline systolic blood pressure There was significant fall in systolic blood pressure following induction in Group C (123.73±05.39) compared to Group L (127.30±07.82) with 'P' value of 0.045. After 1 min of intubation ,SBP in both groups were increased significantly from baseline with Group C (148.20±05.35) and Group L (144.68±07.33) and the 'P' value of <0.05 in both the groups but the rise in SBP was significantly more in Group C compared to Group L as 'P' value was 0.012 . At 3min and 5min after intubation SBP in both the groups were comparable

DIASTOLIC BLOOD PRESSURE (mmHg)

In the present study baseline, mean diastolic blood pressure was 81.47 ±05.64 and 80.33 ± 07.42 in GROUP C and GROUP L respectively with p 0.508, hence both groups were comparable. After 1min of intubation, the rise in diastolic blood pressure was statistically significant in both groups (P 0.003) with Group C (99.50 ±06.65) and Group L (94.27±06.41) whereas at 3min and 5min both the groups were comparable with 'P' values of 0.791 and 0.403 respectively and DBP of 85.70±07.13 and 78.90±07.26 for Group C and 86.17±06.45 and 77.37±06.83 for Group L at 3min and 5min respectively

Mean Blood Pressure (mmHg)

In the present study baseline mean arterial pressures were comparable in GROUP C (mean 98.45±04.88) and GROUP L (mean 97.26±07.33) with p 0.463. Mean arterial pressure increased significantly in GROUP C (115.73±05.16) at 1min after intubation compared to GROUP L(110.94±06.30) with a 'P' value of 0.002 whereas both the groups are comparable at 3min and 5min of intubation with 'P' values of 0.928 and 0.438 respectively.Mean arterial pressure reached below baseline value at 5min in both the groups.

CONCLUSION:

Based on the results of our study, we can say that both the agents can be used as a premedicant, as both the agents cause attenuation of hemodynamic response following laryngoscopic intubation but more attenuation is seen with Group L. Inj Clonidine Hydrochloride in the dose of 1mcg/kg was found to be insufficient to reduce pressure response to intubation. Hence, we recommend Inj Lignocaine 1.5 mg/kg to be used more frequently as a premedication in patients undergoing elective surgery under general anesthesia and we need to increase the dose of clonidine for complete blunting of intubation response.

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