Original Research Paper

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COMPARISON OF INTRAVENOUS LIGNOCAINE VERSUS INTRAVENOUS DEXMEDETOMIDINE IN ATTENUATION OF CARDIOVASCULAR AND AIRWAY RESPONSES TO ANAESTHESIA EMERGENCE AND TRACHEAL EXTUBATION

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ABSTRACT **Background:** Endotracheal extubation during anesthesia emergence often triggers cardiovascular and airway stress responses, such as hypertension, tachycardia, and coughing. Various drugs, including lignocaine and dexmedetomidine, have been studied to mitigate these responses, but their comparative efficacy remains a key focus. **Objectives:** This study aimed to compare the effectiveness of intravenous dexmedetomidine and lignocaine in attenuating hemodynamic and airway responses during tracheal extubation in patients undergoing general anesthesia. **Methodology:** A prospective, comparative study was conducted on 100 ASA I-II patients aged 18–45 years, randomly assigned to Group D (dexmedetomidine 0.5 mcg/kg) or Group X (lignocaine 1.5 mg/kg). Hemodynamic parameters (heart rate, blood pressure), respiratory rate, oxygen saturation, extubation quality, and adverse effects were recorded at baseline, during drug infusion, and post-extubation. Statistical analysis was performed using independent t-tests and chi-square tests. **Results:** Dexmedetomidine significantly attenuated heart rate and blood pressure fluctuations compared to lignocaine ($p < 0.001$). At extubation, Group D exhibited lower mean heart rate (93.58 ± 9.9 vs. 102.92 ± 14.75) and systolic blood pressure (131.30 ± 6.34 vs. 138.38 ± 4.91). Post-extubation, Group D maintained stable hemodynamics with fewer airway responses (coughing, laryngospasm). Extubation quality was superior in Group D (72% smooth extubations vs. 18% in Group X, $p < 0.001$). However, Group D had prolonged awakening (348.22 ± 107.65 sec vs. 269.86 ± 97.24 sec) and extubation times (233.14 ± 104.28 sec vs. 175.96 ± 100.16 sec). Adverse effects like bradycardia (12% vs. 8%) and vomiting (4% vs. 6%) were comparable ($p = 0.834$). Oxygen saturation and respiratory rate showed no significant differences between groups. **Conclusion:** Dexmedetomidine is more effective than lignocaine in stabilizing hemodynamics and improving extubation quality, albeit with delayed recovery times.

KEYWORDS : Dexmedetomidine, Lignocaine, Tracheal extubation, Hemodynamic stability, Airway reflexes

INTRODUCTION

Endotracheal intubation is an integral part of modern anaesthesia techniques for major surgical procedures[1] which may lead to sympathetic stimulation and result in an increase in catecholamine levels leading to hypertension and tachycardia[2]. Extubation during lighter planes of anaesthesia or sedation is also associated with hemodynamic changes due to reflex sympathetic discharge caused by epi-pharyngeal and laryngopharyngeal stimulation[3] which may result in tachycardia, hypertension arrhythmias and increased myocardial oxygen consumption. These hemodynamic changes are reflected as rise in heart rate and arterial blood pressure and are usually variable, transitory and unpredictable[4].

For the endotracheal extubation to be smooth, the patient should not have any straining, coughing, bucking, movement, laryngospasm or bronchospasm[5]. Various drugs and techniques have been tried from time to time to attenuate the airway and stress responses during tracheal extubation. But none of the method has been completely successful[6,7]. Trials have been conducted to attenuate the hemodynamic and stressor responses during tracheal extubation by using various drugs like inhalational agents, local anesthetics, vasodilators, opioids, alpha blockers, betablockers and calcium channel blockers[8].

Studies have been carried out using fentanyl[15], sevoflurane, lignocaine[9], propofol, magnesium sulphate, clonidine, esmolol, labetalol, diltiazem[10,11], etc., either as a sole agent or in comparison with each other. α-2 agonists decrease the sympathetic outflow and noradrenergic activity, thereby counteracting hemodynamic fluctuations occurring at the time of extubation due to increased sympathetic stimulation. Recently dexmedetomidine, a potent α-2 adrenoreceptor agonist has been used to facilitate extubation in surgical intensive care unit. A single dose of dexmedetomidine has been found effective in attenuation of the airway and circulatory reflexes during extubation[12].

Lignocaine (2%) has been used to modulate unwanted airway and circulatory reflexes, via intravenous (IV) injection, endotracheal cuff inflation, intra tracheal (IT) instillation, tube lubrication and aerosolized form[13]. With this background, this study was conducted to compare the degree of attenuation of hemodynamic responses and airway reflexes to extubation by Lignocaine (1.5mg/kg IV) with administration of Dexmedetomidine at the dosage of 0.5 mcg/kg body weight, given as an infusion 10 minutes[14], prior to extubation, following surgery under general anesthesia.

MATERIALS AND METHODS

The present prospective, comparative study was conducted at Department of Anaesthesiology, Rajarshee Chhatrapati Shahu Maharaj Government Medical College, Kolhapur between January 2020 to January 2021 (12 months). Total 100 Patients, aged between 18 to 45 years, with ASA class I and II scheduled for elective surgery under general anesthesia were included in study. After obtaining informed written consent, patients were randomly divided into 2 groups: Group D: Dexmedetomidine group - 50 patients and Group X: Lignocaine group - 50 patients. Patients with Allergy to adrenergic agonist, history of uncontrolled hypertension, Obesity, heart block greater than first degree, history of alcohol or drug abuse or with clinically significant diseases, were excluded.

With a minimum Fasting state of 6-8 hours, all patients were pre-oxygenated for 3 minutes and pre-medicated with Inj. ranitidine 1mg/kg; Inj. Ondansetron 4mg; Inj. Glycopyrrolate 5mcg/kg; Inj. Midazolam 0.03mg/kg and Inj. Pentazocine 0.5 mg/kg intravenously. They were induced with Inj. Propofol 2mg/kg and intubation facilitated with Inj. Atracurium 0.5mg/kg intravenously. Patients were maintained on 66% nitrous oxide in oxygen and isoflurane 1%-2%. Atracurium was used for maintenance of muscle paralysis. In Group D: Dexmedetomidine 0.5mcg/kg body weight diluted to 10 ml in normal saline will be infused over 10 minutes, approximately 10 minutes prior to extubation. In Group X: Lignocaine 1.5mg/kg body weight, diluted in 10ml normal saline, will be given 5minutes prior to extubation.

At beginning of closure of skin incision or approximately 10 minutes

prior to reversal, isoflurane was discontinued which is followed by beginning of IV dexmedetomidine; and Nitrous oxide was discontinued at the end of completion of dressing. Residual neuromuscular blockade was reversed using injection neostigmine 0.05mg/kg and injection glycopyrrolate 0.01mg/kg intravenously. Patients were extubated when fulfilled the extubation criteria - Sustained head lift for 5 seconds, sustained hand grip for 5 seconds and adequate level of consciousness. All patients were given O_2 by face mask during the recovery period. Awakening time is defined discontinuation of nitrous oxide to eye opening. Extubation time id defined as completion of reversal to extubation.

Initial parameters like the heart rate, systolic arterial blood pressure, diastolic arterial blood pressure and mean arterial pressure were documented in both groups, just before injecting drug (A0). Later at one, three, five, and ten minutes (A1, A3, A5, A10) after injection in group D and one, three, and five minutes (A1, A3, A5) after injection in group L prior to extubation and documented in both the groups at extubation (E0) and 1, 3, 5, 10, 15 min after extubation (E1, E3, E5, E10, E15).

Respiratory rate, SpO_2 and airway responses like coughing, breath holding, laryngospasm or bronchospasm was recorded at extubation (E) and 1, 3, 5, 10 and 15 min after extubation (E1, E3, E5, E10, E15). At the end of extubation, quality of extubation was recorded with five-point scale[15]. After extubation, all these patients were observed for sedation by Modified Ramsey sedation score as[16]. Time taken for eye opening after Nitrous oxide is discontinued was recorded. Time taken for extubation was recorded. Any change in Heart rate (HR) and blood pressure (BP) (±20% of pre drug administration value), if occurred was recorded and treated with appropriate drugs, if required. Any other side-effect of study drugs if occurs, will also be recorded.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. The association between study groups, and age, weight, duration of surgery (in min), HR, SBP, DBP, MAP, Percentage oxygen saturation, RR, Patient's sedation score after extubation (according to Ramsay's Sedation Scale), Time to awaken (sec), Time for extubation (sec) was assessed by comparing the mean values. Independent sample t-test was used to assess statistical significance. Data was also represented using appropriate diagrams like bar diagram and trend line diagram.

The association between study group (Dexmedetomidine, Lignocaine) and gender, ASA grade, cough scale, post-extubation complications was assessed by cross tabulation and comparison of percentages. Chi square test was used to test statistical significance. Data was also represented using appropriate diagrams like bar diagram. P value < 0.05 was considered statistically significant. IBM SPSS version 21 was used for statistical analysis.

RESULTS

Comparison of Baseline Characteristics of Patients of Both Groups (N=100)

The mean age in group Dexmedetomidine was 30.36±7.8 and the mean age in group lignocaine was 31.94±7.9 years. In dexmedetomidine group, 54% were males and 46% were females whereas in Lignocaine group, 44% were males and 56% were females. Age and gender distribution between both groups were comparable (p value >0.05).

Table 1: Comparison of Baseline Characteristics of Patients of Both Groups (N=100):

Parameters		Study group		Unpaired t test P Value
		Dexmedetomidine (N=50)	Lignocaine (N=50)	
Mean Age (years)		30.36±7.86	31.94±7.90	0.318
Gender	Male	27 (54%)	22 (44%)	0.317
	Female	23 (46%)	28 (56%)	
Mean Weight (Kgs)		56.52±6.37	58.92±6.79	0.071
ASA Grade	I	39 (78%)	40 (80%)	0.806
	II	11 (22%)	10 (20%)	

Mean weight in dexmedetomidine group was 56.52±6.37 Kgs whereas in Lignocaine group 58.92±6.79 Kgs. ASA I 78% & ASA II 22% in dexmedetomidine group whereas ASA I 80% & ASA II 20% in Lignocaine group. Mean weight and ASA grades of both groups were comparable (p value >0.05).

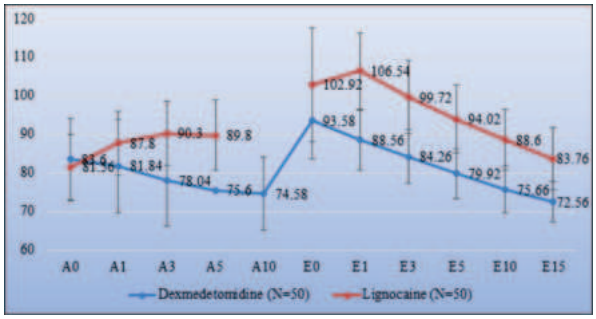
Comparison of Mean Duration of Surgery (in min) Between Study Groups:

Duration of surgery in Dexmedetomidine group was 122.22±19.46 minutes whereas in lignocaine group 115.22±16.79 minutes. The duration of surgery was similar in both groups (p value >0.05).

Comparison of Mean Heart Rate Between Study Groups:

The mean heart rate shows of dexmedetomidine group just before drug infusion (A0) and during drug infusion (1,3,5,10) minutes were 83.60±10.72, 81.84±12.10, 78.04±11.88, 75.60±0.05 and 74.58±9.52, whereas in Lignocaine group, (1,3,5) minutes it was 129.08±4.82, 127.36±5.41, 126.96±5.72, and 123.8±5.17 respectively. The difference is not significant (p value 0.294). The mean heart rate during extubation (E0) in dexmedetomidine group is 93.58±9.9 which is significantly lower that lignocaine group,102.92±14.75 (p value <0.05)

The mean HR of dexmedetomidine group after extubation at E1, E 3, E5, E10 and E15 minutes are 88.56±7.79, 84.26±7.06, 79.92±6.4, 75.66±6.04, 72.56±5.3 respectively. The mean HR of Lignocaine group after extubation at E1, E3, E5, E10 and E15 minutes are 106.54±9.93, 99.72±9.6, 94.02±8.8, 88.60±7.98, 83.76±8.0 respectively. At all the time periods, the difference was statistically significant (all p values <0.001).

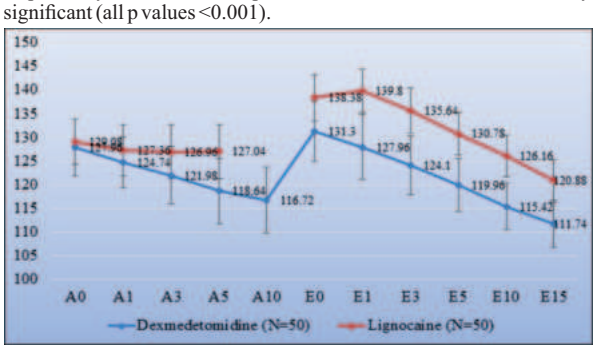


Graph 1: Line Diagram of Comparison of Mean Heart Rate Between Study Groups (N=100):

Comparison of Mean Systolic Blood Pressure Between Study Groups:

The mean of systolic blood pressure of dexmedetomidine group just before drug infusion (A0) and during drug infusion (1,3,5,10) minutes were 127.96±5.99 and 124.74±5.4,121.98±6.13,118.64±6.90, 116.72±7.02 whereas in Lignocaine group, just before drug infusion (A0) and during drug infusion (1,3,5) minutes it was 129.08± 4.82 and 127.36± 5.41,126.96±5.72,123.8±5.17 respectively. At all the time periods, the difference was statistically significant (all p values <0.001). The mean of systolic blood pressure of dexmedetomidine group at the time of extubation (E0) was 131.30±6.34 and that of lignocaine group is 138.38±4.91 The P value at time of extubation was <0.001 (significant).

The mean of systolic blood pressure of dexmedetomidine group after extubation at E1, E3, E5, E10, E15 minutes were 127.96±6.90, 124.10± 6.09, 119.96± 5.53, 115.42±4.81 and 111.74±5.01 respectively. The mean of systolic blood pressure of Lignocaine group after extubation at E1, E3, E5, E10, E15 minutes were 139.80± 4.60, 135.64±4.76, 130.78±4.40, 126.16±4.42 and120.88±4.49 respectively. At all the time periods, the difference was statistically significant (all p values <0.001).

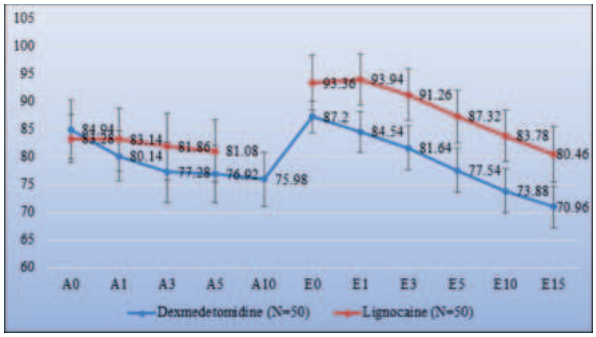


Graph 2: Line Diagram of Comparison of Mean Systolic Blood Pressure Between Study Groups (N=100)

Comparison of Mean Diastolic Blood Pressure Between Study Groups:

The mean diastolic blood pressure of dexmedetomidine group just before drug infusion (A0) and during drug infusion (1,3,5,10) minutes were 84.94±5.22 and 80.14±4.55, 77.28±5.48, 76.92±5.18, 75.98±4.88 whereas in Lignocaine group, just before drug infusion (A0) and during drug infusion (1,3,5) minutes it was 83.28±4.31 and,83.14±5.64, 81.86±5.96, 81.08±5.66 respectively. At all the time periods, the difference was statistically significant (all p values <0.001). The mean diastolic blood pressure of dexmedetomidine group at the time of extubation (E0) was 87.2±2.8 and that of lignocaine group is 93.76±40. The P value at the time of extubation was <0.001 which is statistically significant.

The mean diastolic blood pressure of dexmedetomidine group after extubation at E1, E3, E5, E10, E15 minutes were 84.54±3.6, 81.64± 3.9, 77.54±3.9, 73.88±3.9, 70.96±3.7, respectively. The mean diastolic blood pressure of Lignocaine group after extubation at E1, E3, E5, E10, E15 minutes were 93.94±4.6, 91.26±4.7, 87.32±4.8, 83.78±4.5, 80.46±5.07 respectively. At all the time periods, the difference was statistically significant (all p values <0.001).



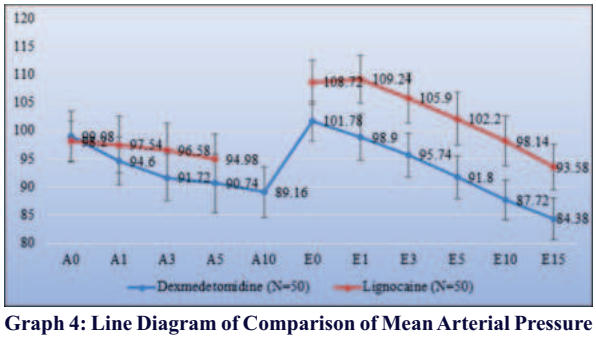
Graph 3: Line Diagram of Comparison of Mean Diastolic Blood Pressure Between Study Groups (N=100)

Comparison of Mean Arterial Pressure Between Study Groups:

Mean values of mean arterial blood pressure of dexmedetomidine group just before drug infusion (A0) and during drug infusion (1,3,5,10) minutes were 99.08±4.53, 94.6±4.28,91.72±4.17, 90.74±5.24 and 89.16±4.52, whereas in Lignocaine group, just before drug infusion (A0) and during drug infusion (1,3,5) minutes it was 98.28±3.53 and 97.54±5.02, 96.58±4.81, 94.98±4.52 respectively. The P values of the diastolic blood pressure base value pre op were 0.281 (insignificant) and before extubation 0.002. <0.001, <0.001, <0.001 (significant).

The mean value of the mean arterial pressure of dexmedetomidine group at the time of extubation (E0) was 101.78± 3.4 and that of lignocaine group is 108.72±3.9. The P value at the time of extubation was <0.001 which is statistically significant. The mean values of the mean arterial pressure of dexmedetomidine group after extubation at E1, E3, E5, E10, E15 minutes were 98.90±4.1,95.74±3.9, 91.80±3.8, 87.72±3.5, 84.38±3.7 respectively.

The mean values of the mean arterial pressure of dexmedetomidine group after extubation at E1, E3, E5, E10, E15 minutes were 109.24±4.26, 105.90± 4.41, 102.20±4.6, 98.14±4.44, 93.58±4.1, respectively. The P values of the diastolic blood pressure base value pre op were 0.281 (insignificant) and before extubation 0.002. <0.001, <0.001, <0.001 (significant).

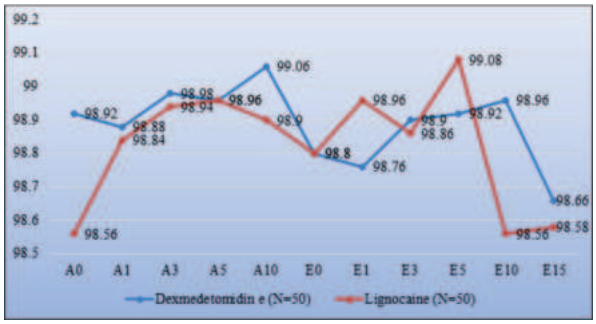


Graph 4: Line Diagram of Comparison of Mean Arterial Pressure Between Study Groups (N=100):

Comparison of Mean Percentage Oxygen Saturation Between Study Groups:

Table 16 shows that the mean values of the mean Sp02 in dexmedetomidine group before extubation were 98.92± 0.92 and 98.88±1.00 whereas in lignocaine group, it was 98.56±1.53 and 98.84±0.82. Statistical analysis reveals a P value of the mean Spo2 before extubation 0.157 and 0.827 respectively. The p values are statistically not significant. The mean value of the mean Spo2 of dexmedetomidine group at the time of extubation (E0) was 98.80± 0.95 and that of lignocaine group is 98.80±0.95. Statistical analysis reveals a P value of the mean Spo2 at the time of extubation was 1.000. The p values are statistically not significant.

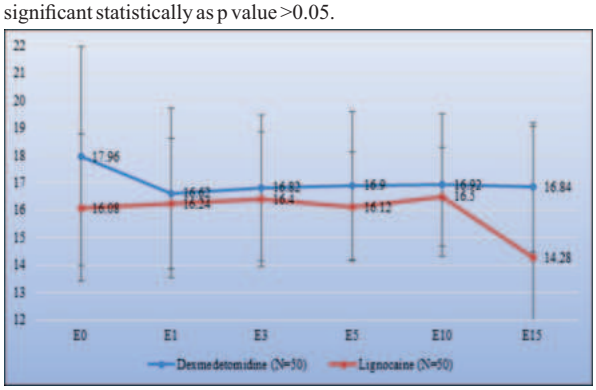
The mean values of the mean Spo2 of dexmedetomidine group after extubation at E1, E3, E5, E10, E15 minutes were 98.76±0.7, 98.90±0.7, 98.92±0.8, 98.96±1.0, 98.66±0.7, respectively. The mean values of the mean Spo2 of lignocaine group after extubation at E1, E3, E5, E10, E15 minutes were 98.96±0.73, 98.86±0.73, 99.08±0.80, 98.56±0.88, 98.58±1.01, respectively. Statistical analysis reveals a P value of the mean Spo2 after extubation at E1, E3, E5, E10, E15 minutes as 0.185, 0.781, 0.330, 0.292, 0.658 These P values are statistically not significant.



Graph 5: Trend Line Diagram of Mean Percentage Oxygen Saturation Between Study Groups (N=100)

Comparison of Mean Respiratory Rate Between Study Groups:

The mean value of the mean RR of dexmedetomidine group at the time of extubation (E0) was 17.96±3.99. and that of lignocaine group is 16.08±2.68. Statistical analysis reveals a P value of the mean RR at the time of extubation was 0.007. The p values are statistically significant. The mean values of the mean RR of dexmedetomidine group and lignocaine group after extubation at E1, E3, E5, E10, minutes were not significant statistically as p value >0.05.



Graph 6: Trend Line Diagram of Mean Respiratory Rate Between Study Groups (N=100)

Table 2: Comparison of Mean Patient's Sedation Score After Extubation (according to Ramsay's Sedation Scale) Between Study Groups (N=100)

Patient's sedation score after extubation (RS Scale)	Study group		Unpaired t test P Value
	Dexmedetomidine (N=50)	Lignocaine (N=50)	
0 Min	2.58±0.50	1.72±0.61	<0.001
15 Min	2.16±0.14	1.36±0.48	<0.001
30 Min	1.68±0.47	1.14±0.35	<0.001

At all time (0,15,30 minutes) mean sedation score after extubation was significantly higher in dexmedetomidine group compared to lignocaine group (p value <0.001).

Table 3: Comparison of Extubation Quality Score With Study Groups (N=100)

Extubation quality score	Group		Total	P value
	Dexmedetomidine	Lignocaine		
1	6 (12%)	0 (0%)	6 (6%)	<0.001
2	36 (72%)	9 (18%)	45 (45%)	
3	8 (16%)	38 (76%)	46 (46%)	
4	0 (0%)	3 (6%)	3 (3%)	
5	0 (0%)	0 (0%)	0 (0%)	
Total	50 (100%)	50 (100%)	100 (100%)	

Majority of the patients from dexmedetomidine group had lower Extubation quality score compared to the patients from lignocaine group and the difference was significant (p value <0.001)

Table 4: Comparison of Mean Time to Awaken (sec), Time For Extubation (sec) and Side Effects Between Study Groups:

Parameter	Study group		Unpaired t test P Value
	Dexmedetomidine (N=50)	Lignocaine (N=50)	
Time to awaken (sec)	348.22±107.65	269.86±97.24	<0.001
Time for extubation (sec)	233.14±104.28	175.96±100.16	0.006
Post- extubation complications	Bradycardia	6 (12%)	4 (8%)
	Vomiting	2 (4%)	3 (6%)
	Nil	42 (84%)	43 (86%)

Comparison of mean time to awaken (sec) of dexmedetomidine group was 348.22±107.65 sec significantly higher than that of lignocaine group was 269.86±97.24 sec (p value <0.001). Comparison of mean time for extubation (sec) of dexmedetomidine group was 233.14±104.28 sec. significantly higher than that of lignocaine group was 175.96± 100.16 sec (p value <0.001).

Comparison of Post-extubation complications dexmedetomidine group had bradycardia in 12%, vomiting in 4% and 84% nil complications. and that of lignocaine group had bradycardia in 8%, vomiting in 6% and 86% nil complications respectively. The difference was not significant p value 0.834).

DISCUSSION

Heart Rate

In my study, after administration of the study drugs, patients of both groups showed th heart rate variations between dexmedetomidine and lignocaine were statistically significant from the time of extubation and it continued after extubation till the time, the observations were recorded. Safneedha et al.[1], found a statistically significant variation in heart rate noted in this study was comparable with the previous study by Kothari et al[15]. which also showed a significant attenuation of HR in group D when compared to group L, suggesting that dexmedetomidine was superior to lignocaine in obtundation of HR.

Systolic Blood Pressure

In my study, dexmedetomidine controlled systolic blood pressure better than lignocaine. The findings are similar to the below mentioned study. Safneedha et al. [1], found the increase in SBP as response to extubation seems to be significantly higher in Lignocaine group as compared to Dexmedetomidine group, but in both the groups the increase in SBP did not exceed the 20% of baseline value. Barkha Bindu et al. [17], found a statistically significant difference in the SBP beginning from ten minutes from the time of dexmedetomidine administration which continued till twenty minutes after extubation.

Diastolic Blood Pressure

In my study, dexmedetomidine controlled diastolic blood pressure better than lignocaine. The findings are similar to the below mentioned study. Similar observations were found in study by Kothari et al. [15], found a significant rise in DBP during (E) and after extubation (E1). DBP in group D when compared to group L ($P < 0.001$). Barkha Bindu et al. [17], found a statistically significant difference in the DBP beginning from ten minutes from the time of dexmedetomidine administration which continued till twenty minutes after extubation.

Mean Arterial Pressure

In my study, dexmedetomidine controlled diastolic blood pressure better than lignocaine. The findings are similar to the below mentioned study. Turan et al.[3], stated that MAP initially increased during the first 2 minutes followed by decrease from 3rd minute, suggesting that slow infusions are better than rapid bolus doses of dexmedetomidine. Barkha Bindu et al.[17], found a statistically significant difference in the MAP beginning from ten minutes from the time of dexmedetomidine administration which continued till twenty minutes after extubation.

Percent Saturation of Oxygen in The Blood

In my study, The SpO_2 variations between dexmedetomidine and lignocaine were statistically insignificant all the time, the observations were recorded. Hence, in my study, there were no significant differences in SpO_2 between the study groups after tracheal extubation. Desaturation was not observed in any patient in either group. Goyal S et al[18] found no significant difference in SpO_2 after extubation until end of study among 3 groups. Similar finding was consistent in R. Aksu et al[19] observed there were no significant differences in SpO2 between the 2 groups after tracheal extubation. Desaturation was not observed in any patient in either group.

Respiratory Rate

In my study, the RR variations between dexmedetomidine and lignocaine were statistically insignificant all the time, the observations were recorded. Hence, in my study, there were no significant differences in RR between the study groups after tracheal extubation. Goyal S et al[18] found no significant difference was observed in RR after extubation until end of study among 3 groups. Similar finding was consistent in R. Aksu et al[19] observed there were no significant differences in RR between the 2 groups after tracheal extubation.

Extubation Quality Score

In my study, the quality of extubation is better with dexmedetomidine when compared with lignocaine which is in concurrence with the study by Safneedha et al.[1], also observed that quality of extubation is smooth with dexmedetomidine comparing to lignocaine, statically significant (Pvalue-0.001). Kothari et al. [15], observed Patients of both groups showed a significant variation in extubation quality score with absence of airway responses such as cough, breath holding and desaturation during and after extubation observed with dexmedetomidine when compared to lignocaine (Pvalue-<0.05) Barkha Bindu et al. [17], observed in their study that the quality of extubation was better in dexmedetomidine group. 84% patients in the group dexmedetomidine, had minimal cough, whereas 16% patients had moderate cough during extubation.

Emergence – Agitation Score

In my study, the emergence - agitation during extubation and the quality of sedation in the postoperative period is better with dexmedetomidine group comparing to lignocaine group. Similar findings were observed in study by Kothari et al. [15], higher degree of sedation obtained in this study is due to its action on α-2 adrenoreceptors, reduced sympathetic activity and the level of arousal. Antony D et al. [20], also observed majority of patients (73.3% and 66.7%) who received dexmedetomidine 0.5µg/kg and 1µg/kg respectively were drowsy but responding to commands. None of the patients had respiratory depression. R. Aksu et al[19] reported higher sedation scores in patients receiving 0.5µg/kg dexmedetomidine at the end of surgery without respiratory depression in patients.

Time To Awaken

In my study, time to awaken variations between dexmedetomidine and lignocaine were statistically significant, the observations were recorded. So, dexmedetomidine prolonged time to awaken than lignocaine. The findings are similar study by Rao S et al. [21], observed time to eye opening was significantly prolonged in dexmedetomidine group when compared to control group (17.47±3.63 vs 14.03±1.75 minutes, respectively). Guler G et al. [22] also observed that time to emergence was prolonged significantly in dexmed group when compared to control group (9.30±2.9 vs 7.20±2.7 minutes; p<0.01).

Time To Extubate

In my study, time to extubate variations between dexmedetomidine and lignocaine were statistically significant, the observations were recorded. So, dexmedetomidine prolonged time to extubate than lignocaine. The findings are similar study by Antony D et al.[20] The time to extubate was found to be significantly prolonged in patients 40% of patients who received 0.5µg/kg and only16.7% in placebo group had extubation time ≥ 13 minutes. Similar findings have been made by Guler G et al.[22] suggesting 0.5µg/kg of dexmedetomidine 5 minutes before the end of surgery significantly prolonged time to extubate. Similar findings have also been reported by Shruthi AH et

al[23] observed mean time for extubation was slightly prolonged by dexmedetomidine infusion as reported in both these studies.

Adverse Effects

In my study, 12% of the patients in dexmedetomidine group and 8% of the patients in dexmedetomidine group, developed bradycardia respectively and 4% of the patients in dexmedetomidine group and 6% of the patients in dexmedetomidine group developed vomiting respectively, but none of them required intervention. The P value was statistically insignificant (0.834). Safneedha et al. [17], n observed no patients had breath holding / laryngospasm / bronchospasm / respiratory depression during or after extubation in both the study groups which shows dexmedetomidine is safer to use with lesser adverse outcomes. In the study conducted by Barkha Bindu et al.[19], the occurrence of bradycardia was more in dexmedetomidine group than the placebo group. 42% of the patients in dexmedetomidine group had bradycardia, whereas, in the control group, 8% had bradycardia, but treatment was not required in any patient. 8% patients in dexmedetomidine group developed hypotension; whereas, no patients in the placebo group had hypotension. Antony D et al. [23] observed significant bradycardia in patients who received dexmedetomidine, the incidence being higher with 1µg/kg dose.

CONCLUSION

We conclude that a single dose of 0.5 mcg/kg dexmedetomidine given 10minutes before extubation significantly attenuated the hemodynamic and airway response following extubation as compared to 1.5 mg/kg intravenous preservative free 2% lignocaine given before reversal in patients undergoing surgery under General anaesthesia and decreased the complications associated with extubation and had excellent recovery profiles.

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