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Study of Pressor Response Comparing two Different Doses of Dexmedetomidine

KEYWORDS: Dexmedetomidine, Pressor response, Laryngoscopy and Endotracheal intubation

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ABSTRACT *A randomized prospective double blind study entitled "STUDY OF PRESSOR RESPONSE COMPARING TWO DIFFERENT DOSES OF DEXMEDETOMIDINE" was carried out at ACSR GMC, Nellore, in the Department of Anaesthesiology during the period from August 2015 to July 2016. This study was done to compare the effectiveness of two different doses of Dexmedetomidine in attenuating pressor response to laryngoscopy and endotracheal intubation. Dexmedetomidine, an alpha-2 adrenoreceptor agonist was introduced into clinical practice as a short term sedative (<24hrs) and has been targeted for use in the perioperative period. Dexmedetomidine decreases sympathetic tone with attenuation of neuroendocrine and hemodynamic responses to anaesthesia and surgery, reduces anaesthetic requirement, causes sedation and analgesia. Present study concludes that premedication with Inj. Dexmedetomidine in the dose of 1µg/kg body weight as I.V infusion significantly attenuates the pressor response to laryngoscopy and endotracheal intubation when compared to inj.Dexmedetomidine in the dose of 0.5µg/kg body weight I.V infusion without significant side effects.*

INTRODUCTION:
The process of laryngoscopy and intubation are noxious stimuli and therefore constitute a period of extreme haemodynamic stress associated with intense Sympathetic activity marked by tachycardia and hypertension. Various pharmacological and Non-pharmacological methods have been used to attenuate the haemodynamic response to laryngoscopy and endotracheal intubation. Alpha-2 agonists have been used for attenuating the sympathetic response and among alpha-2 agonists both clonidine and Dexmedetomidine appears to fulfill all the above criteria[1]. Both clonidine and Dexmedetomidine have actions on both alpha-1 and alpha-2 receptors but Dexmedetomidine is highly specific and selective alpha-2 adrenoceptors agonist with α2:α1 binding selectivity ratio of 1600:1 compare to 200:1 for clonidine[2]. Various studies have also found that Dexmedetomidine can decrease the haemodynamic response to laryngoscopy and intubation. There are conflicting reports as to which dose of the drug is ideal to suppress the intubation response and also have minimal adverse effects. Hence, our present study is aimed at comparing the effectiveness of two different doses of intravenous Dexmedetomidine, 0.5mgm/kg body weight and 1mgm/kg body weight for attenuation of haemodynamic response to laryngoscopy and endotracheal intubation and also find out any adverse effects.

AIM:
This randomized prospective study was done to compare the effectiveness of two different doses of Dexmedetomidine in attenuating pressor response to laryngoscopy and endotracheal intubation.

OBJECTIVES:
To evaluate the efficacy of two doses of intravenous Dexmedetomidine 0.5 µg/kg body weight and 1µg/kg body weight in attenuating the pressor response to laryngoscopy and endotracheal intubation and side effects if any.

MATERIALS AND METHODS:
Design-
The present study "STUDY OF PRESSOR RESPONSE TO LARYNGOSCOPY AND INTUBATION COMPARING TWO DIFFERENT DOSES OF DEXMEDETOMIDINE" was carried out on patients undergoing various elective surgeries under general anaesthesia at ACSR GMC, Nellore, in the Department of Anaesthesiology during the period from August 2015 to July 2016.

SAMPLE SIZE:
90 patients in the age group 18 – 60 years of either sex, belonging to ASA grade I or II scheduled for elective surgical procedures under general anesthesia.

The study population was randomly divided into three groups.

Group C – (n=30) – received I.V normal saline 10 minutes before induction of anesthesia.

Group D-0.5 – (n=30) – received I.V dexmedetomidine in a dose of 0.5µg/kg diluted in 100ml of normal saline, infused over 10 minutes, given 10 minutes before induction of anesthesia.

Group D-1 – (n=30) – received I.V dexmedetomidine in a dose of 1µg/kg diluted in 100ml of normal saline, infused over 10 minutes, given 10 minutes before induction of anesthesia.

PROCEDURE:
All patients were premedicated intravenously with Inj.Glycopyrolate 0.2mg, Inj.Ondonsetron 0.08mk/kg, Inj.Pantaprazole 40mg, and Inj.Fentanyl 2µg/kg prior to induction.

In the present study dexmedetomidine was diluted with normal saline and given intravenously over 10 minutes using a syringe pump. From the pharmacokinetic profile it is seen that the distribution half life of intravenous dexmedetomidine is approximately 6 minutes, Hence, in the pre-

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sent study dexmedetomidine was administered 10 minutes before induction to blunt the haemodynamic response to laryngoscopy and endotracheal intubation.

Anesthesia was induced after the administration of the study drug using Inj.Thiopentone 5mg/kg titrated to the loss of eyelash reflex, this was followed by Inj.Vecoronium 0.1mg/kg I.V. Laryngoscopy and endotracheal intubation was done after 3 minutes.

The HR, SBP, DBP and MAP were recorded at the following intervals, namely, Basal reading, after the end of drug infusion, Post induction and at 1, 5, 10 minutes following intubation.

OBSERVATION AND RESULTS:

Table:1 Showing the age distribution

Age in Years	Group D-0.5	Group D-1	Group C
	No. of patients	No. of patients	No. of patients
18-20	3 (10)	7 (23.3)	1 (3.3)
21-30	11 (36.7)	12 (40)	8 (26.7)
31-40	10 (33.3)	9 (30)	14 (46.7)
41-55	6 (20)	2 (6.7)	7 (23.3)
Total	30 (100)	30 (100)	30 (100)
Mean age in years±SD	33.83±9.37	28.10±8.03	35.57±8.15
p-value	0.125 (NS)		

Graph:1 Showing the age distribution between three groups

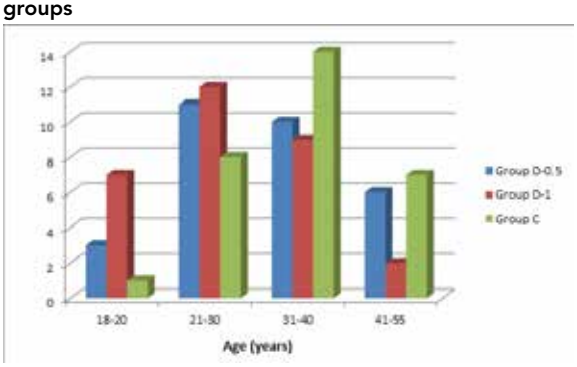
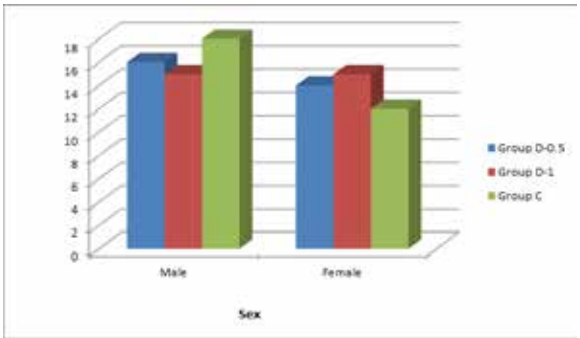


Table 1 shows age distribution of the patients in all three groups. The minimum age in group D-0.5, group D-1 and group C were 18 years, 19 years and 18 years respectively. Maximum age in group D-0.5, group D-1 and group C were 50 years, 52 years and 48 years respectively. All the three groups were similar with respect to age distribution and there is no statistical significance between the groups (p=0.125)

Table:2 Showing the sex distribution between three groups

Sex	Group D-0.5	Group D-1	Group C
	No. of patients	No. of patients	No. of patients
Male	16 (53.3)	15 (50)	18 (60)
Female	14 (46.7	15 (50)	12 (40)
Total	30 (100)	30 (100)	30 (100)
p-value	0.731 (NS)		

Graph:2_Showing the sex distribution between three groups



From the above table 2 the data shows there is no statistical significance in the gender between the three groups.

Table:3 Showing the body weight distribution

Body weight in kgs	Group D-0.5	Group D-1	Group C
	No. of patients	No. of patients	No. of patients
40-44	0 (0)	1 (3.3)	0 (0)
45-49	8 (26.7)	7 (23.3)	6 (20.0)
50-54	5 (16.7)	7 (23.3)	3 (10.0)
55-59	9 (30.0)	7 (23.3)	7 (23.3)
60-64	3 (10.0)	5 (16.7)	11 (36.7)
65-69	2 (6.7)	3 (10.0)	2 (6.7)
70+	3 (10.0)	0 (0)	1 (3.3)
Total	30 (100)	30 (100)	30 (100)
Mean body weight in kg±SD	55.87±8.54	53.83±7.40	57.27±6.32
Minimum body weight in kg	45	40	45
Maximum body weight in kg	81	68	70
p-value	0.334 (NS)		

Graph:3_Showing the body weight distribution

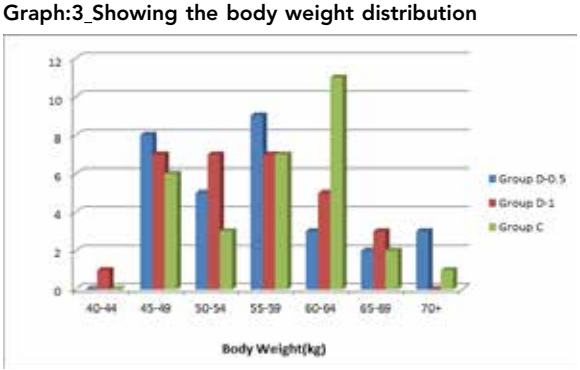


Table 3 and Graph 3 show the body weight distribution of the patient. The minimum body weight in group D-0.5, group D-1 and group C were 45 kg, 40 kg and 45 kg respectively. The maximum body weight in group D-0.5, group D-1 and group C were 81 kg, 68 kg and 70 kg respectively. There is no significance difference in the body weight of patients between the three groups (p=0.139).

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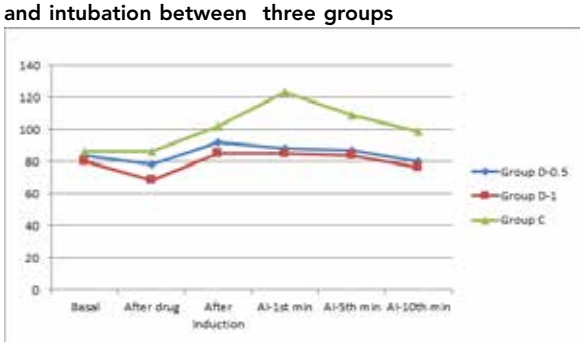
Table:4 Showing the intergroup comparison of mean heart rate (bpm) changes in response to laryngoscopy and intubation between all the groups

	Group D-0.5	Group D-1	Group C	Significance		
				D0.5-C	D1-C	D0.5-D1
Basal	84.1±11.8	80.26±16.5	86.90±10.17	0.444 (NS)	0.460 (NS)	0.198 (NS)
After drug	78.30±11.8	68.36±11.08	86.06±9.76	0.008 (HS)	0.000 (HS)	0.001 (HS)
After induction	92.16±13.1	85.66±12.5	102.10±10.3	0.000 (HS)	0.000 (HS)	0.006 (NS)
AI-1st min	88.36±12.1	85.46±13.5	123.1±11.9	0.000 (HS)	0.000 (HS)	0.245 (NS)
AI-5th min	87.20±10.80	84.63±12.9	109.7±10.5	0.000 (HS)	0.000 (HS)	0.251 (NS)
AI-10th min	80.80±15.4	76.0±12.18	99.3±10.7	0.000 (HS)	0.000 (HS)	0.187 (NS)

(p<0.01) – Highly significant (HS); (p<0.05) – Significant (S); (p>0.05) – Not significant (NS); AI – After intubation.

Graph:4 Showing the intergroup comparison of mean heart rate (bpm) changes in response to laryngoscopy and intubation between three groups

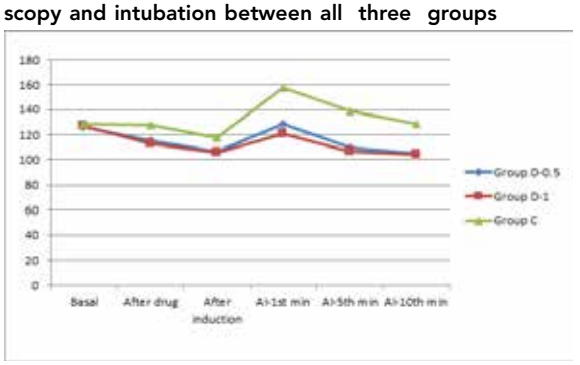


- The statistical evaluation shows statistical significance in the mean HR between group D-0.5 and group D-1, after the study drug. The changes in the mean HR were comparable in both the groups and statistically not significant, after the induction, after intubation at 1st min, 5th min and 10th min.
- The statistical evaluation shows highly statistical significance in the mean HR between group D-0.5 and group C, after study drug administration and after induction. There is also a highly significant decrease in HR in group D-0.5 when compared to group C, after induction at 1st min, 5th min and 10th min.
- The statistical evaluation shows statistical significance in the mean HR between group D-1 and group C, after study drug administration and after induction. There is also a highly significant decrease in HR in group D-1 when compared to group C, after induction at 1st min, 5th min and 10th min.

Table:5 Showing the intergroup comparison of systolic Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups

	Group D-0.5	Group D-1	Group C	P value		
				D 0.5-C	D 1-C	D 0.5-D1
Basal	125.93±12.4	127.23±13.6	128.56±5.99	0.300 (NS)	0.626 (NS)	0.701 (NS)
After drug	114.6±12.09	113.0±11.17	128.33±5.21	0.000 (HS)	0.005 (HS)	0.581 (NS)
After induction	106.8±14.2	105.7±9.31	118.46±21.06	0.015 (S)	0.000 (HS)	0.118 (NS)
AI-1st min	128.7±12.54	121.23±18.5	157.86±4.88	0.000 (HS)	0.000 (HS)	0.071 (NS)
AI-5th min	110.16±15.09	107.43±13.4	139.30±8.11	0.000 (HS)	0.000 (HS)	0.462 (NS)
AI-10th min	104.86±13.15	103.7±11.5	129.2±7.11	0.000 (HS)	0.000 (HS)	0.717 (NS)

Graph:5 Showing the intergroup comparison of systolic Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups



- In group D-1 when compared to groupD-0.5, statistical evaluation shows no significance in the mean SBP values after drug administration and after induction and also at various intervals after intubation between the two groups.
- Statistical evaluation shows highly statistical significant decrease in the mean SBP in group D-0.5 when compared to group C, after study drug administration and after induction. There is also highly significant decrease in mean SBP in group D-0.5 when compared to group C, after intubation at 1st min, 5th min and 10th min.
- Statistical evaluation shows statistical significant decrease in the mean SBP in group D-1 when compared to group C, after study drug administration and after induction. There is also highly significant decrease in mean SBP in group D-1 when compared to group C, after intubation at 1st min, 5th min and 10th min.

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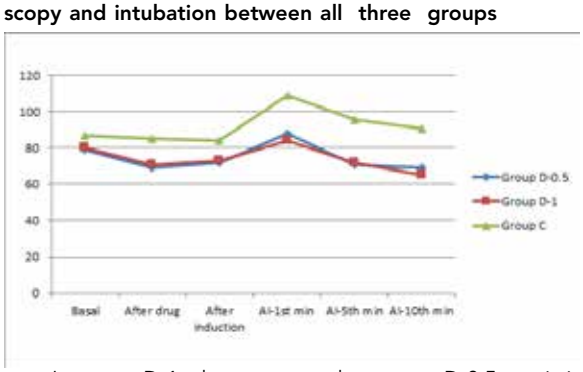
Table:6_Showing the intergroup comparison of Diastolic Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups

	Group D-0.5	Group D-1	Group C	P value		
				D 0.5-C	D 1-C	D 0.5-D1
Basal	79.03±9.56	79.50±9.40	87.40±12.44	0.571 (NS)	0.464 (NS)	0.850 (NS)
After drug	69.13±8.81	71.40±11.28	84.73±6.46	0.007 (HS)	0.040 (S)	0.390 (NS)
After induction	72.43±12.96	73.06±12.70	84.06±8.13	0.010 (S)	0.030 (S)	0.849 (NS)
AI-1st min	87.96±14.32	84.36±13.36	108.73±5.97	0.000 (HS)	0.000 (HS)	0.318 (NS)
AI-5th min	70.60±11.82	71.73±14.37	95.86±8.21	0.000 (HS)	0.000 (HS)	0.402 (NS)
AI-10th min	68.63±10.59	65.16±12.89	90.53±7.61	0.000 (HS)	0.000 (HS)	0.260 (NS)

Graph:6 Showing the intergroup comparison of Diastolic Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups

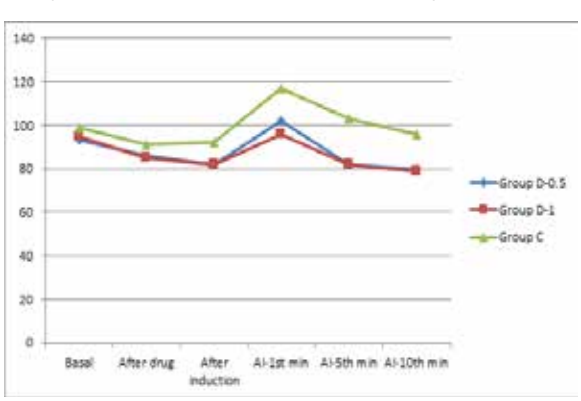


- In group D-1 when compared to group D-0.5, statistical evaluation shows no significance in the mean DBP values after drug administration and after induction and also at various intervals after intubation between the two groups.
- Statistical evaluation shows highly statistical significance in the mean DBP in group D-0.5 when compared to group C, after study drug administration and after induction. There is also highly significant decrease in mean DBP in group D-0.5 when compared to group C, after intubation at 1st min, 5th min and 10th min.
- Statistical evaluation shows statistical significance in the mean DBP in group D-1 when compared to group C, after study drug administration and after induction. There is also highly significant decrease in mean DBP in group D-1 when compared to group C, after intubation at 1st min, 5th min and 10th min.

Table:7 Showing the intergroup comparison of Mean Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups

	Group D-0.5	Group D-1	Group C	P value		
				D 0.5-C	D 1-C	D 0.5-D1
Basal	93.40±6.93	94.73±11.53	99.00±3.17	0.319 (NS)	0.216 (NS)	0.590 (NS)
After drug	86.00±6.83	85.00±11.98	91.13±3.40	0.001 (HS)	0.009 (S)	0.693 (NS)
After induction	81.96±10.12	82.40±11.56	92.70±8.15	0.040 (HS)	0.040 (S)	0.120 (NS)
AI-1st min	102.10±12.7	95.93±14.19	117.6±5.81	0.000 (HS)	0.000 (HS)	0.054 (NS)
AI-5th min	82.10±10.11	82.30±15.5	102.83±7.59	0.000 (HS)	0.000 (HS)	0.984 (NS)
AI-10th min	79.66±9.63	79.40±13.26	96.56±6.59	0.000 (HS)	0.000 (HS)	0.929 (NS)

Graph:7 Showing the intergroup comparison of Mean Blood pressure (mmHg) changes in response to laryngoscopy and intubation between all three groups



- In group D-1, there is statistically significant decrease in mean MAP after drug administration when compared to group D-0.5. Statistical evaluation shows no significance in the mean MAP values after drug administration and after induction and also at various intervals after intubation between the two groups.
- Statistical evaluation shows highly statistical significance in the mean MAP in group D-0.5 and group C, after study drug administration and after induction. There is also highly significant decrease in mean MAP in group D-0.5 when compared to group C, after intubation at 1st min, 5th min and 10th min.
- Statistical evaluation shows statistical significance in the mean MAP in group D-1 and group C, after study drug administration and after induction. There is also highly significant decrease in mean MAP in group D-1 when compared to group C, after intubation at 1st min, 5th min and 10th min.

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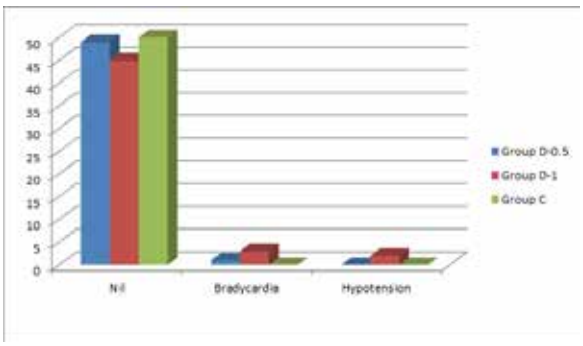
Table:8 Showing the side effects between three groups

	Nil	Bradycardia	Hypotension	Treatment required
Group D-0.5	49	1	0	1
Group D-1	45	3	2	5
Group C	50	0	0	0
P value	0.10 (NS)			

Graph:8 Showing the side effects between three groups



In group D-0.5, one patient had bradycardia which was treated. In group D-1 three patients had bradycardia and two patients had hypotension who were treated. In group C none of the patients had bradycardia or hypotension.

DISCUSSION:

Dexmedetomidine and clonidine are centrally acting α**2** agonists which have antihypertensive, negative chronotropic, sedative and analgesic actions in addition to their ability to decrease the anesthetic drug requirements and have been particularly effective in blunting the haemodynamic response to laryngoscopy and endotracheal intubation. In view of this the present study was undertaken to compare the efficacy of I.V Dexmedetomidine 0.5 **µ**g/kg to I.V Dexmedetomidine 1 **µ**g/kg in obtunding the haemodynamic response to laryngoscopy and endotracheal intubation when administered 10 minutes before the procedure.

A prospective double blind study entitled "STUDY OF PRESSOR RESPONSE COMPARING TWO DIFFERENT DOSES OF DEXMEDETOMIDINE" was carried out at ACSR GMC, Nellore, in the Department of Anaesthesiology during the period from August 2015 to July 2016. Ninety patients scheduled for various elective surgical procedures under general anesthesia belonging to ASA class I and II and mallampatti grade I & II in the age group of 18 years to 60 years were included in this study.

The study population was randomly divided into three groups.

Group C – (n=30) – received I.V normal saline 10 minutes before induction of anesthesia.

Group D-0.5 – (n=30) – received I.V dexmedetomidine in a dose of 0.5**µ**g/kg diluted in 100ml of normal saline, infused over 10 minutes, given 10 minutes before induction of anesthesia.

Group D-1 – (n=30) – received I.V dexmedetomidine in a dose of 1**µ**g/kg diluted in 100ml of normal saline, infused over 10 minutes, given 10 minutes before induction of anesthesia.

Comparative analysis of haemodynamic data between Dexmedetomidine and control groups at various intervals

Changes in heart rate after Dexmedetomidine and saline administration

In the present study, it was observed that there was a statistically highly significant decrease in the mean HR after the administration of 0.5mcg/kg body weight and 1 mcg/kg body weight of dexmedetomidine before induction which is similar to the finding of Scheinin[3] et al. Jaakola[4] et al.Basar[5] et al. Keniya[6] et al. Chirag Patel[7] et al.

Compared to, group D-0.5, it was observed that there is a statistically highly significant decrease in the mean HR in group D-1. The same thing has also been observed in the studies conducted by Martina Aho[8] et al. Kunisawa[9] et al. and Sagirogulu[10] et al.

After Induction

After Induction of anaesthesia, compared to preinduction values, it was found that HR increased by nearly 16 bpm in control group. In group D-0.5 there is a increase in HR of 8 bpm and in group D-1 there is a increase in HR of 5 bpm which is statistically highly significant.

After Laryngoscopy and Intubation

At 1st min

In the present study, following laryngoscopy and intubation at 1 min, the mean HR increased by 36 bpm In the control group whereas in group D-0.5 the mean HR increased by only 4 bpm and in group D-1 the mean HR increased by only 5 bpm which is statistically highly significant (p=0.000) when compared to control group. But the mean change in HR after intubation at various intervals in between group D-0.5 and group D-1 was not statistically significant.

Aho et al. noted that following laryngoscopy and intubation HR at 1 min increased by 35 bpm in control group and 15 bpm in 0.5mcg/kg dexmedetomidine group which was statistically significant and compares with the present study.

At 5th min

The increased in mean HR in control group sustained even at 5th in and was 23 bpm whereas in group D-0.5 and group D-1 there is a decrease in HR by 3 and 4 bpm respectively which is statistically highly significant (p=0.000). Similar observations were made by Scheinin[3] et al. and Jaakola[4] et al.

At 10th min

In the present study even at 10th min, there was increase in HR by 13 bpm in control group compared to decrease in the HR by 4 bpm in both group D-0.5 and group D-1 which was statistically highly significant (p=0.000). Present study compares with the studies done by Basar[5] et al. and Chirag Patel[7] et al, who also observed a decrease of 5 bpm and 12 bpm at the end of 10th min.

In the present study, compared to 0.5mcg/kg body weight, there was no significant difference in the mean HR at 1st min, 5th min and 10th min after intubation with 1 mcg/kg body weight. Both were equally effective in obtunding the HR response. Same thing has also observed by Sagirogulu[10] et al.

Changes in Systolic Blood pressure (SBP)

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After Dexmedetomidine administration
After administration of Dexmedetomidine, there is a gradual reduction in SBP till induction in both group D-0.5 and D-1, by 11 and 14 mmHg respectively compared to basal value which was statistically highly significant. Aho[8] et al. Keniya[6] et al. found a continuous gradual reduction of SBP as in present study. There was no reduction in SBP in control group till induction which was statistically not significant.

After Induction
After induction there was a reduction of 19 mmHg of SBP in group D0.5 and a reduction of 22 mmHg in group D-1 and 10mmHg in control group compared to basal value which is statistically highly significant. Similar observations were made by Kunisawa[9] et al. where in there was a decrease in SBP by 12 mmHg in Dexmedetomidine group.

After Laryngoscopy and Intubation
At 1st min
In the present study, following laryngoscopy and intubation at 1 min, the mean SBP increased by 29 mmHg in the control group whereas in group D-0.5 increased by only 3mmHg and in group D-1 decreased by only 6 mmHg which is statistically highly significant (p=0.000) when compared to control group. But the mean change in SBP after intubation at various intervals in between group D-0.5 and group D-1 was not statistically significant.

Studies done by Scheinin[3] et al. Jaakola[4] et al and Keniya[6] et al. found similar results that compares with present study.

At 5th min
The increase in SBP in control group sustained even at 5th min and was 11 mmHg whereas in group D-0.5 and group D-1 there is a decrease in SBP by 15 and 10 mmHg respectively which is statistically highly significant (p=0.000).

Studies done by Scheinin[3] et al. Jaakola[4] et al and Keniya[6] et al. found similar results.

At 10th min
In the present study even at 10th min, there was increase in SBP by 1 mmHg in control group compared to decrease in the SBP by 27 mmHg, 24 mmHg in both group D-0.5 and group D-1 which was statistically highly significant (p=0.000).

In our study, comparing the SBP at various time intervals after laryngoscopy and intubation between group D-0.5 and group D-1, there was no statistical significant difference. This is consistent with the studies conducted by Sagirogulu[10] et al.

Changes in diastolic blood pressure (DBP)
After Dexmedetomidine administration
There is a gradual decrease of DBP after drug administration in both group D-0.5 and group D-1, which is statistically significant. In control group there is not much of variation In DBP till induction.

Similar observations were also found by Aho[8] et al. Kunisawa[9] et al. and Keniya[6] et al. where there was a decrease in DBP in dexmedetomidine group and no change in control group.

After induction
In the present study, there was a reduction of 3 mmHg in the control group and 7 mmHg in group D-0.5 and 6 mmHg in group D-1 compared to basal value.

Jaakola[4] et al. found a decrease I DBP by 3 mmHg in control group and 15 mmHg in Dexmedetomidine group which compares with the present study.

After Laryngoscopy and Intubation
At 1st min
In the present study, following laryngoscopy and intubation at 1 min, the mean DBP increased by 2 mmHg in the control group whereas in group D-0.5 increased by only 8 mmHg and in group D-1 decreased by only 5 mmHg which is statistically highly significant (p=0.000) when compared to control group. But the mean change in DBP after intubation at 1st min in between group D-0.5 and group D-1 was not statistically significant.

At 5th min
The increase in DBP in control group sustained even at 5th min and was 8 mmHg whereas in group D-0.5 and group D-1 there is a decrease in DBP by 9 and 8 mmHg respectively which is statistically highly significant (p=0.000).

Studies done by Scheinin[3] et al. Jaakola[4] et al and Keniya[6] et al. found similar results that compares with present study.

In present study, comparing the DBP at various time intervals after 5th min between group D-0.5 and group D-1, there was no statistical significance difference.

This is consistent with the studies conducted by Sagirogulu[10] et al.

At 10th min
In present study even at 10th min, there was increase in DBP by 3 mmHg in control group compared to decrease in the DBP by 11 mmHg and 14 mmHg in both group D-0.5 and group D-1 which was statistically highly significant (p=0.000).

In present study, comparing the DBP at various time intervals after laryngoscopy and intubation between group D-0.5 and group D-1, there was no statistical significant difference. This is consistent with the studies conducted by Sagiroglu[10] et al.

Changes in mean arterial pressure (MAP)
After Dexmedetomidine administration
After administration of Dexmedetomidine, there is a continuous fall in MAP in both group D-0.5 and group D-1, till induction which is statistically significant. In control group not much of variation was observed in MAP till induction compared to basal values and to Dexmedetomidine group.

Basar[5] et al. found similar results.
After Induction
After induction, there was a reduction in MAP by 7 mmHg control and 12 mmHg in group D-0.5 and 12 mmHg in group D-1 which is statistically significant when compared to group C.

Similarly Mowafi[11] et al. observed a decrease in MAP by 13 mmHg in Dexmedetomidine group which compares with the present study.

After Laryngoscopy and Intubation
At 1st min

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In the present study, following laryngoscopy and intubation at 1 min, the MAP increased by 18 mmHg in the control group whereas in group D-0.5 increased by only 9 mmHg and in group D-1 the decreased by only 1 mmHg which is statistically highly significant (p=0.000) when compared to control group. But the mean change in MAP after intubation at 1st min in between group D-0.5 and group D-1 was not statistically significant.

At 5th min

The increase in MAP in control group sustained even at 5th min and was 3 mmHg whereas in group D-0.5 and group D-1 there is a decrease in MAP by 11 mmHg and 12 mmHg respectively which is statistically highly significant (p=0.000).

Studies done by Scheinin[3] et al. Jaakola[4] et al and Keniya[6] et al. found similar results that compares with present study.

In present study, comparing the MAP at various time intervals after 5th min between group D-0.5 and group D-1, there was no statistical significance difference.

This is consistent with the studies conducted by Sagirogulu[10] et al.

At 10th min

In present study even at 10th min, there was decrease in MAP by 3 mmHg in control group compared to decrease in the MAP by 14 mmHg and 15 mmHg in both group D-0.5 and group D-1 which was statistically highly significant (p=0.000). Similar to studies done by Basar[5] et al.

In present study, comparing the MAP at various time intervals after laryngoscopy and intubation between group D-0.5 and group D-1, there was no statistical significance difference.

This is consistent with the studies conducted by Sagirogulu[10] et al.

Side Effects

In group D-0.5, one patient had bradycardia which was treated with inj.atropine.

In group D-1 three patients had bradycardia and two patients had hypotension who were treated with inj.atropine and inj.mephenteramine. In group C none of the patients had bradycardia or hypotension.

SUMMARY:

A prospective randomized study titled **"STUDY OF PRESSOR RESPONSE TO INTUBATION COMPARING TWO DIFFERENT DOSES OF DEXMEDETOMIDINE "** was carried out on patients undergoing various elective surgeries under general anaesthesia at ACSR GMC, Nellore, in the Department of Anaesthesiology during the period from August 2015 to July 2016. 90 patients scheduled for various elective surgical procedures belonging to ASA class I and II, in the age group of 18 to 60 years were included in the study. The patients with hypertension, difficult airway, obesity and any other systemic disorders were excluded from the study. The study population was divided randomly into three groups of 30 each.

Group C (saline) patients received 100 ml normal saline infused over 10 min before induction of anaesthesia.

Group D-0.5(n=30) – received IV Dexmedetomidine in a dose of 0.5μg/kg diluted in 100 ml of normal saline infused over 10 min before induction of anaesthesia.

Group D-1(n=30) – received IV Dexmedetomidine in a dose of 1μg/kg diluted in 100 ml of normal saline infused over 10 min before induction of anaesthesia.

All patients were premedicated with inj.Glycopyrolat 0.2mg, Inj.Ondansetron 0.08mg/kg, Inj.Pantoprazole 40mg and Inj.Fentanyl 2 μg/kg prior to induction. Anaesthesia was induced after the infusion of the study drug with sleep dose of Inj.Thiopentone sodium (25%) 5mg/kg. After successful trial ventilation Inj.Vecuronium 0.1mg/kg was given to facilitate laryngoscopy and intubation. The HR, SBP, DBP and MAP were recorded at 1, 5 and 10 min after intubation. There was marked increase in HR, SBP, DBP and MAP throughout the study period following laryngoscopy and intubation in the control group. In dexmedetomidine group, patients showed decrease in HR, SBP, DBP and MAP throughout the study period. This study shows that Dexmedetomidine in a dose of 1μg/kg body weight as I.V infusion significantly attenuates the haemodynamic response to laryngoscopy and intubation for 10 minutes (p<0.001) with minimal adverse effects.

CONCLUSION:

Our study concludes that premedication with Inj.Dexmedetomidine in the dose of 1μg/kg body weight as I.V infusion significantly attenuates the pressor response to laryngoscopy and endotracheal intubation when compared to inj.Dexmedetomidine in the dose of 0.5μg/kg body weight I.V infusion without significant side effects. However the study has to be done on large scale population for further evaluation.

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