A CLINICAL STUDY OF EFFECT OF TWO DIFFERENT DOSES OF DEXMEDETOMIDINE ON HAEMODYNAMIC RESPONSE TO LARYNGOSCOPY AND ENDOTRACHEAL INTUBATION

Rashmi H. D¹, Aruna Tegginamath², Srinivas V. Y³

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ABSTRACT: OBJECTIVE OF THE STUDY: To compare the effectiveness of two different doses of Dexmedetomidine, 0.6µg/kg body weight and 1µg/kg body weight in attenuating haemodynamic response to laryngoscopy and endotracheal intubation. **MATERIAL AND METHODS:** 90 ASA Class 1 patients posted for elective surgery divided into 3 groups, Group DX-0.6 receive Dexmedetomidine, 0.6µg/kg body weight Group DX-1 receive Dexmedetomidine, 1µg/kg body weight and Group CT receive normal saline. The HR, SBP, DBP, MAP recorded at different intervals. **OBSERVATIONS:** There was a decrease in mean HR in group DX-0.6 and group DX-1 (p=0.000) when compared to group CT at 1st, 5th and 10th minutes after intubation and showed a fall in SBP in group DX-0.6 and group DX-1 at 2nd min, 5th min and 8th min of drug administration and before and after induction compared to group CT. The decrease in mean SBP observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was significant compared group CT (p=0.000). Significant fall in DBP in group DX-0.6 and group DX-1 at 8th min of drug administration and before and after induction compared to group CT. The decrease in mean DBP observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was significant compared to group CT (p=0.000). A fall in MAP in group DX-0.6 and group DX-1 at 2nd min, 5th min and 8th min of drug administration and before and after induction compared to group CT. The decrease in mean MAP observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was significant compared to group CT (p=0.000). **CONCLUSION:** Dexmedetomidine - 0.6µg/kg body weight and 1µg/kg body weight are equally efficacious in obtunding the haemodynamic responses to laryngoscopy and endotracheal intubation.

KEYWORDS: Different doses of dexmeditomedine, laryngoscopy, intubation.

BACKGROUND: Dexmedetomidine in the dose of 0.6µg/kg body weight¹⁻³ and 1µg/kg body weight⁴⁻⁷ as intravenous bolus for attenuating the haemodynamic response. There are conflicting reports as to which dose of the drug is ideally to suppress the intubation response and also have minimal adverse effects. So, the present study is aimed at comparing the effectiveness of two different doses of intravenous Dexmedetomidine, 0.6µg/kg body weight and 1µg/kg body weight for attenuating haemodynamic response to laryngoscopy and endotracheal intubation.

OBJECTIVES: To compare the effectiveness of two doses of Dexmedetomidine, 0.6µg/kg body weight and 1µg/kg body weight in attenuating haemodynamic response to laryngoscopy and endotracheal intubation.

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MATERIAL AND METHODS: The study was undertaken after obtaining ethical committee clearance as well as informed consent from all patients. Ninety patients, scheduled for various elective surgical procedures under general endotracheal anesthesia were selected for the study.

INCLUSION CRITERIA FOR THE STUDY: Adult patients aged between 18 and 55 years of both sex belonging to ASA class I posted for Elective surgeries under general endotracheal anesthesia.

EXCLUSION CRITERIA FOR THE STUDY: Patients with cardiac, coronary, renal, hepatic, cerebral diseases and peripheral vascular diseases. Hypertension, difficult airway and obese patients (BMI>30), hyperthyroidism, hypothyroidism and diabetes mellitus, emergency surgeries, Pregnant females, time taken for laryngoscopy and intubation exceeding 15 seconds.

The study population (90 patients) was randomly divided into three groups with 30 patients in each group using sealed envelopes containing the name of the group and patient is asked to pick up the envelope. The envelope was opened by senior anesthesiologist who was assigned to prepare the solutions and was not involved with the study.

Group DX-0.6: (n=30) received injection Dexmedetomidine 0.6µg/kg body weight –diluted to 10 ml of normal saline, administered intravenously over 10 min.

Group DX-1: (n=30) received injection Dexmedetomidine 1µg/kg body weight –diluted to 10 ml of normal saline, administered intravenously over 10 min.

Group CT: (n=30) received 10 ml of normal saline, administered intravenously over 10 min.

Pre-anesthetic evaluation was done on the evening before surgery. A routine pre-anesthetic examination was conducted assessing.

- General condition of the patient.
- Airway assessment by Mallampatti grading and rule of 1-2-3.
- Nutritional status and body weight of the patient.
- A detailed examination of the cardiovascular system.
- A detailed examination of the Respiratory system.

The following investigations were done in all patients.

- Haemoglobin estimation.
- Urine examination for albumin, sugar and microscopy.
- Standard 12-lead electrocardiogram.
- X-ray chest/Screening of chest.
- Blood sugar, FBS/PPBS.
- Blood urea, Serum creatinine.

All patients included in the study were premeditated with tablet alprazolam 0.5 mg and tablet ranitidine 150 mg orally at bed time the previous night before surgery. They were kept NPO 10 pm onwards on the previous night.

On arrival of the patient in the OT, an 18-gauge intravenous cannula was inserted under local anaesthetic infiltration and an infusion of 500ml Ringer Lactate was started. The patients were

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connected to STAR PLUS-LARSEN & TOUBRO INDIA LIMITED, multipara meter monitor which records heart rate, non-invasive measurements of SBP, DBP, MAP, EtCO₂ and continuous ECG monitoring and oxygen saturation. The baseline systolic blood pressure, diastolic blood pressure, mean arterial pressure and heart rate were recorded (basal parameters). The cardiac rate and rhythm were also monitored from a continuous visual display of electrocardiogram from lead II.

After recording the baseline readings, patients in group DX-0.6, received Dexmedetomidine 0.6µg/kg body weight diluted in 10 ml normal saline intravenously over 10 min using syringe pump, 10 min before induction.

Patients in group DX-1, received Dexmedetomidine 1µg/kg body weight, diluted in 10 ml normal saline intravenously over 10 min using syringe pump, 10 min before induction.

Patients in group CT received normal saline 10 ml intravenously over 10 min using syringe pump, 10 min before induction.

The study drug was prepared by the senior anaesthesiologist who was not involved in the study and as such, the observer as well as patient was blinded for the study.

All patients were premedicated with injection midazolam- 0.02mg/kg body weight and injection fentanyl 1µg/kg body weight IV after test drug administration, 3 min before induction. Then patients were preoxygenated for 3 minutes via a face mask with Bain's circuit. Anesthesia was induced with injection thiopentone as a 2.5% solution, in 25 mg increments till the loss of eye lash reflex. Endotracheal intubation was facilitated with 1.5mg/kg IV succinylcholine one minute prior to laryngoscopy and intubation. Laryngoscopy and intubation were performed using Macintosh no. 3 blade lasting for not more than 15 seconds and after confirmation of bilateral equal air entry and EtCO₂, the endotracheal tube was fixed.

Anesthesia was maintained using 66.66% nitrous oxide and 33.33% of oxygen with 1% Isoflurane. After the patients recovered from succinylcholine, further neuromuscular blockade was maintained with vecuronium 0.05 mg/ kg body weight initially and 0.5 mg increments as and when required. At the end of the procedure patients were reversed with inj. neostigmine- 0.05 mg/kg body weight and inj glycopyrolate- 0.01 mg/ kg body weight.

MONITORING: The following cardiovascular parameters were recorded in all patients.

Heart rate [HR] in beats per minute, Systolic blood pressure [SBP] in mm of Hg, Diastolic blood pressure [DBP] in mm of Hg, Mean arterial pressure [MAP] in mm of Hg.

The above cardiovascular parameters were monitored in the following time interval.

1. Basal- before giving study drug.
2. 2 minutes after study drug.
3. 5 minutes after study drug.
4. 8 minutes after study drug.
5. Before induction.
6. After induction.
7. One minute after laryngoscopy and intubation.
8. Five minutes after laryngoscopy and intubation.
9. Ten minutes after laryngoscopy and intubation.

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SIDE EFFECTS:

1. Hypotension was defined as SBP $\leq$ 20% of baseline value.²
2. Tachycardia was defined as HR $>$ 25% of baseline value.⁸
3. Bradycardia was defined as HR $<$ 45 beats/ minute.^{2,9}

Incidences of all these parameters were recorded in all the three groups. The side effects of the study drug like hypotension, bradycardia and sedation were noted. Hypotension was treated using 3mg increments of IV mephenteramine and fluids. Bradycardia was treated using 0.6mg of IV atropine.

STATISTICAL METHODS EMPLOYED

SAMPLE SIZE: A sample size of 25 patients were needed to detect an intergroup difference of atleast 10% in BP and HR with a power of 0.80 and α of 0.05. In order to make good for dropouts, a total number of 30 patients in each group were included for the study. It was also based on the pilot studies done in our hospital and other various studies.

REPEATED MEASURE ANOVA: Repeated Measures analyses groups of related dependent variables that represent different measurements of the same attribute. This dialog box lets define one or more within-subjects factors for use in GLM Repeated Measures. The order in which you specify within-subjects factors is important. Each factor constitutes a level within the previous factor.

SPSS for windows (version 17.0) was employed for data analysis.

$p < 0.05$ was considered as significant and $p < 0.01$ was considered as highly significant.

OBSERVATIONS:

($p < 0.01$) – Highly significant (HS); ($p < 0.05$) – Significant (S);

($p > 0.05$) – Not significant (NS); ADA-After drug administration; AEI- After endotracheal intubation.

	GROUP DX-0.6	GROUP DX-1	GROUP- CT	p-value
Basal	89.1 $\pm$ 11.8	84.26 $\pm$ 16. 5	86.90 $\pm$ 10.17	0.365 (NS)
ADA – 2 nd min	80.46 $\pm$ 12.1	69.26 $\pm$ 9.41	87.90 $\pm$ 9.63	0.000 (HS)
ADA – 5 th min	78.30 $\pm$ 11.8	68.36 $\pm$ 11.08	86.06 $\pm$ 9.76	0.000 (HS)
ADA – 8 th min	75.50 $\pm$ 11.5	67.33 $\pm$ 10.54	84.43 $\pm$ 10.05	0.000 (HS)
Before induction(BI)	75.60 $\pm$ 10.4	68.76 $\pm$ 10.29	84.73 $\pm$ 10.6	0.000 (HS)
After induction	83.16 $\pm$ 13.1	73.66 $\pm$ 12.5	96.10 $\pm$ 10.3	0.000 (HS)
AEI – 1 st min	93.36 $\pm$ 12.1	89.46 $\pm$ 13.5	123.1 $\pm$ 11.9	0.000 (HS)
AEI – 5 th min	86.20 $\pm$ 10.80	82.63 $\pm$ 12.9	109.7 $\pm$ 10.5	0.000 (HS)
AEI – 10 th min	84.80 $\pm$ 15.4	80.0. $\pm$ 12.18	100.3 $\pm$ 10.7	0.000 (HS)

Table 1: Showing the intergroup comparison of mean heart rate (bpm) changes in response to laryngoscopy and intubation between all the groups.

The basal mean heart rates were comparable in all three groups (0.365). Statistical evaluation between the groups showed a highly significant fall in HR in group DX-0.6 and DX-1 at 2nd, 5th and 8th minutes of drug administration and before and after induction compared to group CT. There is highly

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significant decrease in mean HR in group DX-0.6 and group DX-1 ($p=0.000$) when compared to group CT at 1st, 5th and 10th minutes after intubation.

	GROUP DX-0.6	GROUP DX-1	GROUP- CT	p-value
Basal	125.93±12.4	127.23± 13.6	128.56± 5.99	0.662 (NS)
ADA – 2 nd min	124.66±13.7	115.7±10.06	127.8±5.82	0.000 (HS)
ADA – 5 th min	114.6±12.09	113.0±11.17	128.33±5.21	0.000 (HS)
ADA – 8 th min	112.56±12.3	112.83±10.45	127.1±5.36	0.000 (HS)
Before induction(BI)	111.93±11.0	111.9±9.95	131.7±5.94	0.000 (HS)
After induction	106.8±14.2	105.7±9.31	118.46±21.06	0.000 (HS)
AEI – 1 st min	128.7±12.54	121.23±18.5	157.86±4.88	0.000 (HS)
AEI – 5 th min	110.16±15.09	107.43±13.4	139.03±8.11	0.000 (HS)
AEI – 10 th min	104.86±13.15	103.7±11.5	129.2±7.11	0.000 (HS)

Table 2: Showing the intergroup comparison of Systolic Blood Pressure (mm Hg) changes in response to laryngoscopy and intubation between all three groups

The basal mean SBP were comparable in all three groups ($p=0.662$). Statistical evaluation between the groups showed a highly significant fall in SBP in group DX-0.6 and group DX-1 at 2nd min, 5th min and 8th min of drug administration and before and after induction compared to group CT. The decrease in mean SBP observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was statistically highly significant compared to the same in group CT ($p=0.000$).

	GROUP DX-0.6	GROUP DX-1	GROUP CT	p-value
Basal	79.03±9.56	79.50± 9.40	77.40± 12.44	0.722(NS)
ADA – 2 nd min	77.10±8.19	72.03±10.41	75.73±5.00	0.051 (NS)
ADA – 5 th min	69.13±8.81	71.40±11.28	74.73±6.46	0.061 (NS)
ADA – 8 th min	68.73±8.75	70.63±11.08	76.13±5.32	0.004 (HS)
Before induction(BI)	72.53±10.12	70.66±11.02	76.53±4.70	0.042 (S)
After induction	72.43±12.96	73.06±12.70	74.06±8.13	0.030 (S)
AEI – 1 st min	87.96±14.32	84.36±13.36	98.73±5.97	0.000 (HS)
AEI – 5 th min	70.60±11.82	67.73±14.37	85.86±8.21	0.000 (HS)
AEI – 10 th min	68.63±10.59	65.16±12.89	80.53±7.61	0.000 (HS)

Table 3: Showing the intergroup comparison of Diastolic Blood Pressure (mm Hg) changes in response to laryngoscopy and intubation between all three groups

The basal mean DBP were comparable in all three groups. Statistical evaluation between the groups showed a significant fall in DBP in group DX-0.6 and group DX-1 at 8th min of drug administration and before and after induction compared to group CT. The decrease in mean DBP

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observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was statistically highly significant compared to same in group CT (p=0.000).

	GROUP DX-0.6	GROUP DX-1	GROUP CT	p-value
Basal	93.40±6.93	94.73± 11.53	92.00± 3.17	0.419(NS)
ADA – 2 nd min	90.70±6.48	85.9±9.55	91.26±4.11	0.007(HS)
ADA – 5 th min	86.00±6.83	85.00±11.98	91.13±3.40	0.010(HS)
ADA – 8 th min	82.80±8.40	84.50±11.49	91.20±3.96	0.001(HS)
Before induction (BI)	83.60±7.95	83.73±10.32	91.93±3.39	0.000(HS)
After induction	81.96±10.12	82.40±11.56	85.70±8.15	0.000(HS)
AEI – 1 st min	102.10±12.7	94.93±14.19	117.6±5.81	0.000(HS)
AEI – 5 th min	82.10±10.11	82.30±15.5	102.83±7.59	0.000(HS)
AEI – 10 th min	79.66±9.63	79.40±13.26	96.56±6.59	0.000(HS)

Table 4: Showing the intergroup comparison of Mean Arterial Pressure (mm Hg) changes in response to laryngoscopy and intubation between all three groups

The basal mean MAP values were comparable in all three groups. Statistical evaluation between the groups showed a significant fall in MAP in group DX-0.6 and group DX-1 at 2nd min, 5th min and 8th min of drug administration and before and after induction compared to group CT. The decrease in mean MAP observed at 1st, 5th and 10th minutes after intubation in group DX-0.6 and group DX-1 was statistically highly significant compared to same in group CT(p=0.000).

	Nil	Bradycardia	Hypotension	Treatment required
Group DX-0.6	49	0	0	1
Group DX-1	45	3	2	5
Group CT	50	0	0	0
P value	0.10 (NS)			

Table 5: Showing the side effects between three groups

(p>0.05) – Not significant (NS)

DISCUSSION: Dexmedetomidine has been found by various authors^{1-5,10-13} to blunt the haemodynamic response for laryngoscopy and intubation. Different doses of Dexmedetomidine have been used to find the effectiveness for blunting haemodynamic responses to laryngoscopy and intubation, with conflicting results. It has been used in the doses of 0.3µg/kg, 0.4µg/kg, 0.5µg/kg, 0.6µg/kg and 1µg/kg body wt. 0.3µg/kg to 0.5µg/kg body wt dose was not very effective in blunting the response.^{3,12,14} Both 0.6µg/kg^{1,2,10} and 1µg/kg^{5-7,13} have been found to be effective. It is not yet found which one of these doses is effective with minimal side effects. Hence, in our study these two doses of Dexmedetomidine have been compared to know the minimum effective dose of the drug for this purpose with least side effects.

METHOD OF ADMINISTRATION: In the present study dexmedetomidine was diluted in 10 ml of normal saline and given intravenously over 10 minutes using syringe pump. Rapid administration of

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bolus dose of dexmedetomidine, initially results in transient increase in blood pressure and reflex decrease in HR. The initial reaction is due to peripheral α -2B adrenoceptors stimulation of vascular smooth muscle and can be attenuated by a slow infusion over 10 minutes. Hence in our study we administered the bolus dose over 10 minutes.¹⁵

The administration of the test drugs over 10 minutes in our study concurs with the studies conducted by Mowafi et al.¹⁰ Basar et al.¹² and Kunisawa et al.⁴

TIMING OF ADMINISTRATION OF DEXMEDETOMIDINE: From the pharmacokinetic profile, it is seen that the distribution half-life of intravenous dexmedetomidine is approximately 6 minutes.¹⁵

Various authors Aho et al.,³ Scheinin et al.,¹ Jakola et al.,² Mowafi et al.¹⁰ and Keniya et al.¹³ have administered dexmedetomidine 10 minutes before induction.

Hence, in our study dexmedetomidine was administered 10 minutes before induction to blunt the haemodynamic response to laryngoscopy and intubation.

CHANGES IN MEAN HEART RATE IN VARIOUS STUDIES FOLLOWING DEXMEDETOMIDINE ADMINISTRATION.

Sl. No.	Authors and year	Dose employed	Mean Change in HR after dexmedetomidine administration(bpm)			
			2 min	5 min	8 min	BI/10 min
1.	Aho et al. ³ - 1991	0.6 μ g/kg	-9	-9	-9	+4
2.	Scheinin et al. ¹ -1992	0.6 μ g/kg	-	-	-	-10
3.	Jaakola et al. ² -1992	0.6 μ g/kg	-	-	-	-5
4.	Basar et al. ¹² -2008	1 μ g/kg	-	-	-	-9
5.	Kunisawa et al. ⁴ -2009	1 μ g/kg	-	-	-	-14
6.	Ferdi et al. ⁵ -2010	1 μ g/kg	-	-	-4	-
7.	Keniya et al. ¹³ – 2011	1 μ g/kg	-	-	-	-10
8.	Chirag Patel et al. ⁷ -2012	1 μ g/kg		-6		-6
9.	Our study	0.6 μ g/kg	-9	-11	-14	-14
		1 μ g/kg	-15	-16	-17	-15

Table 6

The sign (-) denotes decrease and (+) denotes increase in HR. The spaces which have been left blank ('-'), are the parameters not studied by the authors.

In our study, it was observed that there was a statistically highly significant decrease in the mean HR after the administration of 0.6 μ g/kg body wt and 1 μ g/kg body wt of Dexmedetomidine before induction which concurs with the findings of Scheinin et al.,¹ Jaakola et al.,² Basar et al.,¹² Keniya et al.¹³ and Chirag Patel et al.⁷

Compared to, group DX-0.6, it was observed that there is a statistically highly significant decrease in mean HR in group DX-1. The same thing has also been observed in the studies conducted

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by Martina Aho et al.,³ Kunisawa et al.⁴ and Sagioglu et al.¹⁴ who have found that higher doses of Dexmedetomidine produces more decrease in the HR.

AFTER INDUCTION: After induction of anaesthesia, compared to preinduction values, it was found that HR increased by nearly 12 bpm in the control group. In group DX-0.6 there is a increase in HR of 8 bpm and in group DX-1 there is a increase in HR of 5bpm which is statistically highly significant. In all the 3 groups there is an increase in the HR after the administration on thiopentone. This is in accordance to the property of Dexmedetomidine, the baroreceptor activity is being well preserved.¹

AFTER LARYNGOSCOPY AND INTUBATION

AT 1ST MIN: In the present study, following laryngoscopy and intubation at 1 minute, the mean HR increased by 36 bpm in the control group whereas in group DX-0.6 the mean HR increased by only 4 bpm and in group DX-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 DX-0.6 and group DX-1 was not statistically significant. Various authors have found similar response to IV dexmedetomidine at 1 min after intubation.

Aho et al.³ noted that following laryngoscopy and intubation HR at 1 minute increased by 35 bpm in control group and by 15 bpm in 0.6 μ g/kg dexmedetomidine group which was statistically significant and compares with our study. The 15 bpm increase in their study is higher than the group DX-0.6 in our study (4 bpm). This is probably because in their study all the patients were pretreated with glycopyrolate.

AT 5TH MIN: The increase in mean heart rate in control group sustained even at 5th minute and was 23 bpm whereas in group DX-0.6 and group DX-1 there is a decrease in HR by 3 and 4 bpm respectively which is statistically highly significant($p=0.000$).

Similar findings were made by Scheinin et al.¹ and Jakola et al.² with both control and with Dexmedetomidine-0.6 μ /kg.

In the study done by Sagioglu AE et al.,¹⁴ the decrease in HR at 5th min with 1 μ g/kg Dexmedetomidine was 18 bpm which is higher than our study. This is probably because all the patients in our study were preloaded with 500 ml of Ringer Lactate which was not done in the study mentioned above.

AT 10TH MINUTE: In our study even at 10th minute, there was increase in HR by 13 bpm in control group compared to decrease in the HR by 4bpm in both group D-0.6 and group -1 which was statistically highly significant ($p=0.000$). Our study compares with the studies done by Basar et al.¹² and Chirag Patel et al.,⁷ who also observed a decrease of 5 bpm and 12 bpm at the end of 10th min.

In our study, compared to 0.6 μ g/kg body wt, there was no significant difference in the mean HR at 1st min, 5th min and 10th min after intubation with 1 μ g/kg body wt. Both were equally effective in obtunding the HR response. Same thing has also been observed by Sagioglu AE et al.¹⁴

II. CHANGES IN SYSTOLIC BLOOD PRESSURE (SBP)

AFTER DEXMEDETOMIDINE ADMINISTRATION: After administration of Dexmedetomidine, there is a gradual reduction in blood pressure till induction in both group DX-0.6 and group DX-1, which

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was statistically highly significant. Aho et al.³ Ralph Getler et al.¹⁵ and Keniya et al.¹³ found a continuous gradual reduction of SBP as in our 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 DX- 0.6 and reduction of 22mmHg in group DX-1 and 10 mmHg in control group compared to basal value which is statistically highly significant. Similar observations were made by Kunisawa et al.⁴ where in there was a decrease in SBP by 12 mmHg in Dexmedetomidine group.

AFTER LARYNGOSCOPY AND INTUBATION: In our study, it is seen that there is highly significant fall in the SBP in group DX-0.6 and group DX-1 at 1st min 5th min and 10th min following laryngoscopy and intubation compared to control group (p=0.000) wherein there was an increase of SBP of 29mmHg, 11mmHg and 1mmHg at 1st min, 5th min and 10 min following laryngoscopy and intubation respectively.

Studies done by Scheinin et al.,¹ Jaakola et al.,² Ferdi et al.⁵ and Keniya et al.¹³ found similar results that compares with our study.

Comparing the SBP at various time intervals between group DX-0.6 and group DX-1, there was no statistical significant difference. This is consistent with the studies conducted by Sagioglu et al.¹⁴

III. CHANGES IN DIASTOLIC BLOOD PRESSURE (DBP)

AFTER DEXMEDETOMIDINE ADMINISTRATION: There is a gradual decrease of DBP after drug administration at 2nd min, 5th min and 8th min, till induction in both group-DX-0.6 and group DX-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 et al.,³ Kunisawa et al.⁴ and Keniya et al.¹³ 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 DX-0.6 and 6mmHg in group DX-1 compared to basal value.

Jakola et al.² found a decrease in DBP by 3 mmHg in control group and 15 mmHg in Dexmedetomidine group which compares with the present study.

AFTER LARYNGOSCOPY AND INTUBATION: In our study there is an increase of DBP by 21 mmHg in control group which gradually decreased to near basal values by 10th minute. In group DX-0.6 and group DX-1, there is an increase in DBP at 1st min by 8 mmHg and 5 mmHg respectively. However there is a decrease in DBP by 9mmHg and 11mmHg at 5th min and 10th min in group DX-0.6 and decrease in DBP by 8mmHg and 14mmHg at 5th min and 10th min in group DX-1 compared to basal values which is statistically highly significant.

Jakola et al.,² Ferdi et al.,⁵ Kunisawa et al.,⁴ noted similar observations as in our study.

In our study, comparing the DBP at various time intervals after laryngoscopy and intubation between group DX-0.6 and group DX-1, there was no statistical significant difference. This is consistent with the studies conducted by Sagioglu et al.¹⁴

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IV. CHANGES IN MEAN ARTERIAL PRESSURE (MAP)

AFTER DEXMEDETOMIDINE ADMINISTRATION: After administration of Dexmedetomidine, there is a continuous fall in MAP in both group DX-0.6 and group DX-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.

Ferdi et al.,⁵ Basar et al.,¹² and Mowafi et al.¹⁰ found which compares with our study.

AFTER INDUCTION: After induction, there was a reduction in MAP by 12 mmHg in group DX-0.6 and 12 mmHg in group DX-1 which is statistically significant when compared to group CT.

Similarly Mowafi et al.¹⁰ observed a decrease in MAP by 13 mmHg in Dexmedetomidine group which concurs with our study.

AFTER LARYNGOSCOPY AND INTUBATION: At 1st minute, in group DX-0.6, there is an increase of MAP by 9mmHg whereas in group DX-1, there is an increase in MAP by 1mmHg compared to the basal values. However at 5th and 10th min the MAP in group DX-0.6 was lower by 11 mmHg and 14 mmHg respectively, whereas in group DX-1 it was lowered by 12 mmHg and 15 mmHg compared to the basal values which is statistically highly significant, similar to studies done by Basar et al.¹²

In our study, comparing the MAP at various time intervals after laryngoscopy and intubation between group DX-0.6 and group DX-1, there was no statistical significant difference. This is consistent with the studies conducted by Sagioglu et al.¹⁴

CONCLUSION: Two different doses of Dexmedetomidine - 0.6µg/kg body weight and 1µg/kg body weight diluted in 10 ml saline, given 10 minutes before induction are equally efficacious in obtunding the haemodynamic responses to laryngoscopy and endotracheal intubation. we conclude that Dexmedetomidine obtunds the hemodynamic responses to laryngoscopy and endotracheal intubation and - 0.6µg/kg body weight is the ideal dose for the same.

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AUTHORS:

1. Rashmi H. D.
2. Aruna Tegginamath
3. Srinivas. V. Y.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, department of Anaesthesiology, Adichunchanagiri Institute of Medical Sciences, BG Nagar, Bellur, Mandya District Karnataka.
2. Associate Professor, Department of Anaesthesiology, KR Hospital, MMC & RI, Mysore, Karnataka.

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COMPETING INTERESTS: None

3. Associate Professor, Department of Anaesthesiology, KR Hospital, MMC & RI, Mysore, Karnataka

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Aruna Tegginamath,
Associate Professor,
Department of Anaesthesiology,
KR Hospital, MMC & RI,
Mysore, Karnataka.
E-mail: arunkrupa@yahoo.com

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