

# To study dexmedetomidine's effect on intraocular pressure after succinylcholine and endotracheal intubation



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## ABSTRACT

**Background:** One of the most important preconditions for any anesthetic operation is perioperative hemodynamic stability during laryngoscopy and intubation, which has been the subject of extensive research and documentation. Numerous approaches have been proposed to protect the patient from the sympathetic reaction, intraocular pressure (IOP) response, and catecholamine response during laryngoscopy and intubation. **Aims and Objectives:** To study the efficacy of two doses of intravenous dexmedetomidine premedication given as a single bolus dose over 10 min, 0.4 µg/kg and 0.6 µg/kg, 10 min before induction in preventing the rise of intraocular pressure following succinylcholine administration and endotracheal intubation. **Materials and Methods:** A retrospective randomized study was conducted. Ethical committee permission and signed informed consent were obtained from 60 eligible patients before the trial began. **Results:** Premedication with either 0.4 mcg/kg I.V. or 0.6 mcg/kg I.V. of dexmedetomidine diluted in normal saline at a 2 mcg/mL concentration administered over 10 min before induction resulted in significant obtundation of the rise in IOP associated with succinylcholine administration and intubation. Sympathetic response to laryngoscopy and intubation was also significantly diminished. The dose of 0.4 mcg/kg I.V. produced the best hemodynamic stability. **Conclusion:** Therefore, from the above research it can be concluded that, before succinylcholine delivery and intubation, dexmedetomidine 0.4 mcg/kg I.V. can be used as a premedication in situations where an increase in IOP could be hazardous.

**Key words:** Dexmedetomidine; Endotracheal intubation; Intraocular pressure; Succinylcholine administration

## INTRODUCTION

Perioperative hemodynamic stability during laryngoscopy and intubation is thoroughly studied and documented and is one of the most crucial preconditions for any anesthetic surgery. Protective strategies against the sympathetic reaction, intraocular pressure (IOP) response, and catecholamine response of laryngoscopy and intubation have been proposed using a wide variety of methods.

In cases such as piercing globe damage, emergency ophthalmic procedures can be very taxing on an anesthesiologist. Aspiration is a major concern for these

patients since they typically present with a full stomach.<sup>1</sup> Any increase in IOP after a ruptured globe injury might cause vitreous humor to extrude through the wound and cause irreversible vision loss.

Due to the risk of aspiration, these patients need quick sequence induction to avoid a potentially blinding rise in IOP. The depolarizing muscle relaxant succinylcholine is frequently utilized to enable quick sequence induction. However, elevated IOP is a common adverse reaction to succinylcholine.<sup>2,3</sup> The IOP rises much more as a result of the stress response during laryngoscopy and endotracheal intubation.

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Due to their ability to reduce IOP and dampen the sympathetic response, alpha 2 agonists find useful application in ophthalmic procedures. Clonidine<sup>4,6</sup> and dexmedetomidine also have these characteristics as alpha 2 agonists. Dexmedetomidine is extremely selective and specific for the alpha-2 adrenergic receptor, whereas clonidine acts on both the alpha-1 and alpha-2 adrenergic receptors.<sup>7</sup> Dexmedetomidine's sedative, anxiolytic, sympatholytic, and analgesic actions are well described,<sup>8,9</sup> and it causes only mild respiratory depression. Dexmedetomidine has a half-life of about 2–3 h in the body.

Dexmedetomidine has been utilized for many years in other nations. It has only recently been made available in India. Good IOP control, an immobile and uncongested operating field, and cardiovascular stability are the anesthetic goals of any ophthalmic surgery. Therefore, two doses of dexmedetomidine were premedicated to see how they affected intra ocular pressure following succinylcholine administration and intubation.

#### Aim and objectives

- To study Dexmedetomidine's effect on IOP
- To study succinylcholine effect and endotracheal intubation.

## MATERIALS AND METHODS

A retrospective randomized study was conducted. Ethical committee permission and signed informed consent were obtained from 60 eligible patients before the trial began. This study was conducted at Konaseema Institute of Medical Sciences and Research Foundation, Amalapuram during February 2015–November 2016.

#### Inclusion criteria

Elective non ophthalmic surgeries under general anesthesia (GA)

- 18–60 years
- Male or Female
- ASA I or II
- Intubation with First Attempt.

#### Exclusion criteria

- Body mass index (BMI) >30
- Patients with Mallampati class III/IV
- History of systemic hypertension/diabetes mellitus/coronary artery disease
- Patients with any acute or chronic eye disease or raised IOP
- Patients with any contraindication to succinylcholine.
- Any other contraindication to dexmedetomidine like hemodynamic instability.

- History of any drug intake known to alter IOP.
- Patient's refusal.
- Pregnancy

#### Methodology

Sixty adults with ASA I or II status who were scheduled for elective non-ophthalmic procedures under GA were included. The 60 patients were allocated at random into three groups of 20.

Group C – Control group to receive normal saline as I.V premedication.

Group D4 – Dexmedetomidine group to receive 0.4 mcg/kg of dexmedetomidine as I.V premedication

Group D6 – Dexmedetomidine group to receive 0.6 mcg/kg of dexmedetomidine as I.V premedication.

To make 0.4 mcg/kg of Dexmedetomidine, 1 mL of dexmedetomidine from a 100 g/mL ampoule was mixed with 49 mL of normal saline. After 10 min, participants in the research medication or placebo groups received their respective treatments. The medication was given to the patient 10 min before induction. An anesthetic colleague produced the study medication solution outside of the operating room, concealing its identity from both the anesthesiologist administering GA and the ophthalmologist measuring the patient's IOP.

#### Preoperative evaluation

The patient's medical history was taken before receiving GA, and questions were asked about the severity and length of symptoms, as well as the presence or absence of any other systemic illnesses or past procedures. The patients demographic data was mentioned in the Table 1. The patient's heart and lungs were given a complete systemic check-up.

All patients had a conventional 12-lead electrocardiogram (ECG), echocardiogram, serum electrolytes, and chest X-ray performed in addition to having their blood sugar, urea, serum creatinine, blood sugar, and urine tested for sugar, albumin, and microscopy.

Intravenous cannulation was done in the operating room. Baseline vitals were obtained after the attachment of monitoring devices like non-invasive blood pressure (BP), pulse oximetry probe, and ECG electrodes. Two drops of 4% topical lignocaine were applied to the cornea of each eye. Then, the ophthalmologist took an IOP reading using a Schiottz tonometer to establish a baseline.

**Table 1: Patient's demographic data height, weight, and BMI**

Group	Height, weight, and BMI						Age		Sex			
	Height		Weight		BMI		In years		Male		Female	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	No	%	No	%
Control	158.4	3.8	53.3	6.4	21.2	2.5	39.7	7.6	10	50	10	50
D4	158.0	3.9	54.3	5.5	21.8	2.6	41.5	9.2	11	55	9	45
D6	158.4	3.5	53.5	4.9	21.4	2.4	43.85	6.49	9	45	11	55
P-value between Control and D4 Group			0.7759			0.581			0.4871			
Control and D 6 Group			0.9658			0.8903			0.8663			

BMI: Body mass index

**Table 2: Analyzing IOP within each study group**

IOP value at	Value for						"P" value between		
	Control group		D4 group		D6 group		Control and D4 group	Control and D6 group	D4 and D6 group
	Mean	SD	Mean	SD	Mean	SD			
Baseline	16.47	0.78	16.44	0.74	16.50	0.84	0.9019	0.8928	0.7978
10 min after premedication	16.44	0.78	14.41	0.62	14.00	0.97	<0.0001	<0.0001	0.1277
30 s after thiopentone	15.10	0.60	13.05	0.78	12.63	0.73	<0.0001	<0.0001	0.0842
30 s after succinylcholine	19.39	1.23	15.71	0.59	15.56	0.75	<0.0001	<0.0001	0.4879
After intubation									
1 min	20.5	0.99	16.01	0.41	16.01	0.51	<0.0001	<0.0001	0.9999
5 min	18.7	0.99	15.37	0.78	15.17	0.59	<0.0001	<0.0001	0.3717

IOP: Intraocular pressure

**Table 3: Heart rate variability**

Pulse rate at	Value for						"P" value between		
	Control group		D4 group		D6 group		Control and D4 group	Control and D6 group	D4 and D6 group
	Mean	SD	Mean	SD	Mean	SD			
Baseline	84.1	2.93	83.3	3.46	82.9	3.25	0.4359	0.2287	0.7089
after premedication	84.2	3.42	71.2	4.18	68.15	4.14	<0.0001	<0.0001	0.0261
After thiopentone	85.1	3.40	71.3	3.94	68.95	4.72	<0.0001	<0.0001	0.0964
After succinylcholine	86.2	3.36	72.3	3.64	69.65	4.81	<0.0001	<0.0001	0.0577
After intubation									
1 min	119.0	9.76	101.85	5.07	100.85	2.94	<0.0001	<0.0001	0.4515
5 min	104.6	4.35	95	3.31	96.85	2.53	<0.0001	<0.0001	0.0619
10 min	89.65	9.84	83.35	3.28	82.6	4.22	<0.0001	<0.0001	0.5345
15 min	84.4	3.08	82.75	3.93	83.3	4.40	0.1485	0.3666	0.6792
30 min	84.8	3.33	83.4	3.33	82.6	4.22	0.1919	0.0757	0.5102
45 min	83.7	3.90	84.15	4.54	83.45	4.5	0.7389	0.8522	0.6274
60 min	84.6	3.84	84.2	4.29	82.5	2.35	0.7581	0.0570	0.1182
75 min	85.3	4.31	85.1	4.65	82.5	4.93	0.8887	0.0639	0.0947
90 min	86.7	5.88	84.4	3.97	83.7	3.13	0.1571	0.0535	0.5402
105 min	79	1.9	85.4	4.15	84.4	5.96	0.1619	0.2441	0.5428
120 min	80.3	4.4	85.4	4.15	84.7	4.36	0.2648	0.3353	0.6067

Premedication with dexmedetomidine from the prepared solution was given over the course of 10 min to the D4 and D6 groups, and normal saline was given to the control group.

All participants in all three groups received the same level of GA. Patients were premedicated for 3 min with oxygen before being induced with thiopentone 5 mg/kg and succinylcholine 1.5 mg/kg by injection. Then, using a standard laryngoscope, cuffed endotracheal tubes of

the correct size were inserted into the airways of all three groups. If the trachea could not be intubated on the first try, the patients were ruled out.

Nitrous oxide and oxygen were used for induction, then 0.05 mg/kg of neostigmine and 0.01 mg/kg of glycopyrrolate were injected to keep the patient under. The patients were then extubated after receiving appropriate suction.

**Table 4: SBP fluctuations**

SBP at	Value for						“P” value between		
	Control group		D4 group		D6 group		Control and D4 group	Control and D6 group	D4 and D6 group
	Mean	SD	Mean	SD	Mean	SD			
Baseline	126.6	4.68	126.3	7.98	126.6	7.97	0.8857	0.9999	0.9059
After premedication	127.2	4.32	118.9	6.56	107	5.44	0.0001	<0.0001	<0.0001
After thiopentone	122	5.58	118.6	6.55	109.9	6.06	0.0857	<0.0001	0.0001
After succinylcholine	128.3	5.12	119.1	6.72	115.5	6.38	0.0001	<0.0001	0.0907
After intubation									
1 min	142.65	4.54	132.6	5.19	131.1	3.91	<0.0001	<0.0001	0.3097
5 min	137.5	3.88	128.9	5.08	127.5	6.61	<0.0001	<0.0001	0.4579
10 min	136.4	4.88	123.1	6.88	126.6	7.97	<0.0001	<0.0001	0.1458
15 min	129.9	5.25	127	5.21	129.2	4.47	0.0987	0.6528	0.1799
30 min	128.9	13.58	130.2	16	130	13.88	0.7654	0.8015	0.9638
45 min	130.6	8.4	132.8	9.36	132.5	8.7	0.4394	0.4869	0.9169
60 min	129.65	8.6	130.1	9.21	129.8	9.62	0.8742	0.9589	0.9203
75 min	126.3	13.8	127.3	9	127.1	13.88	0.8192	0.8559	0.9637
90 min	128.7	7.84	130.7	5.36	130.5	5.76	0.3533	0.4129	0.9098
105 min	124	13.18	126.7	34	126.6	13.59	0.5291	0.5461	0.9813
120 min	127.57	7.47	129.2	7.95	128.9	8.39	0.5158	0.6064	0.9083

SBP: Systolic blood pressure

**Table 5: Variations in the DBP**

DBP at	Value for						“P” value between		
	Control group		D4 group		D6 group		Control and D4 group	Control and D6 group	D4 and D6 group
	Mean	SD	Mean	SD	Mean	SD			
Baseline	85	10.37	85.1	9.48	84.6	9.56	0.9748	0.8998	0.8689
After premedication	85.2	9.82	75.1	6.75	70.2	3.54	0.0001	<0.0001	0.0076
After thiopentone	84.1	10.29	69.35	15.52	69.9	3.14	<0.0001	<0.0001	0.8781
After succinylcholine	85	10.04	75.9	7.49	71.8	4.44	<0.0001	<0.0001	0.0435
After intubation									
1 min	106.1	6.47	84.9	8.4	83.7	7.73	<0.0001	<0.0001	0.6422
5 min	97.4	5.95	82.3	8.16	82.8	6.9	<0.0001	<0.0001	0.8361
10 min	92.8	8.16	82.8	8.3	81.7	7.6	0.0005	<0.0001	0.6655
15 min	82.8	10.0	80.5	9.1	81.8	8.7	0.4516	0.7374	0.6457
30 min	84.5	9.2	83.0	8.4	81.3	9.2	0.5938	0.2778	0.5443
45 min	83.4	8.6	82.1	8.3	82.5	7.6	0.6301	0.7286	0.8747
60 min	86.8	8.4	84.7	9.1	84.5	7.9	0.4532	0.3215	0.8536
75 min	83.2	8.0	83.2	8.0	83.2	8.0	1.000	1.0000	1.000
90 min	84.8	9.7	86.8	8.4	83.4	8.6	0.4915	0.6329	0.2158
105 min	86.9	8.3	84.8	9.7	84.8	9.7	0.4681	0.4681	1.0000
120 min	84.6	7.9	84.5	9.2	83.2	8.0	0.9623	0.5782	0.8363

DBP: Diastolic blood pressure

**Parameters monitored**

The following variables were tracked and contrasted across all groups.

- Heart rate
- Systolic BP (SBP)
- Diastolic BP (DBP)
- IOP
- SpO<sub>2</sub>.

In the above Table 2, using a Schiötz indentation tonometer, the IOP was measured at the following intervals:

- Before premedication (baseline)
- 10 min after premedication
- 30 s after thiopentone sodium delivery

- 30 s following succinylcholine
- Approximately 1–5 min after intubation

In the above Tables 3-5, the multipara monitor measured and recorded the subject's heart rate, BP (both systolic and diastolic), and oxygen saturation (SpO<sub>2</sub>). As well as the aforementioned intervals, recordings were made at 10, 15, 30, 45, 60, 75, 90, 105, and 120 min into the operation. Intraoperative and postoperative complications such as hypotension, bradycardia, nausea, and vomiting were analyzed.

**Statistical analysis**

A master chart was created to house all of the obtained data for the sampled cases. Pearson's Chi-square test for

independence of attributes is used to compare groups based on categorical variables represented as number of patients and percentage of patients, such as SEX and ASA at different time points.

One-way analysis of variance is used to compare groups on continuous variables such as age, weight, height, BMI, IOP, SBP, DBP, and systolic/diastolic/total blood oxygen saturation (SpO<sub>2</sub>). The analysis was performed using SPSS version 20. Assuming an alpha of 5%, results with P=0.05 or lower are considered significant.

## RESULTS

### Case study characteristics

The average age (and standard deviation) for the control group was 39.7 years (SD=7.6), the D4 group was 41.5" (SD=9.2), and the D6 group was 43.85" (SD=6.49). There was no statistically significant difference in the age distributions of the three groups.

Males made about 50% of the control group, 55% of D4, and 45% of D6. Women made up half of the control group, 45% of group D4, and 55% of group D6. According to the data presented above, there is no discernible difference in the percentage of males to females within the three categories. All three groups had roughly the same number of men and women.

Body measurements (height, weight, and BMI) are compared across the three groups in the table. Average body mass was 53.3 kg in the control group, 54.3 kg in the D4 group, and 53.5 kg in the D6 group. Average heights across all groups were as follows: 158.4 inches for the control group, 158.0 inches for the D4 group, and 158.4 inches for the D6 group. The mean BMI of the control group was 21.2, while the means of groups D4 (21.8) and D6 (21.4) were higher. The distributions of height, weight, and BMI were comparably even across the three groups.

All three groups had almost the same average surgical times. The average time it took to perform surgery in the control group was 91.5 min, while it took 90.78 min and 90.68 min in the D4 and D6 groups, respectively.

All three groups had similar IOP at the start of the study. After premedication, both the D4 and D6 study groups demonstrated statistically significant decreases in IOP compared to the control group.

While D6 did reduce IOP more than D4, no statistical significance was seen between the two. After thiopentone induction, all three groups' mean IOP drops, although the

control group's IOP is much higher than those of the D4 and D6 groups. While the mean IOP rose in all three groups following succinylcholine and intubation, in D4 and D6 it never rose above its initial value. There was a statistically significant change in IOP after succinylcholine compared to after 1 min and 5 min of intubation.

Average heart rates at rest were similar across the three groups. After dexmedetomidine premedication, both groups' mean rates decreased, although the D6 group's decrease was larger. Following intubation and succinylcholine administration, the mean heart rates of the study groups were considerably lower than those of the control group. However, after intubation, the mean heart rate of the D4 and D6 groups was the same.

There was no statistically significant difference in the mean SBP at baseline between the three groups. After premedication, the average SBP dropped significantly in both study groups compared to the control, but the drop was larger in the D6 group. Thiopentone treatment resulted in the greatest decrease. After intubation, the control group had a higher systolic B.P. than the research groups did. However, after intubation, there was no statistically significant difference in SBP between the two groups.

There was no statistically significant difference in baseline mean DBP. After receiving premedication, both D4 and D6 groups experienced a considerable decrease in DBP, but the D6 group saw an even more dramatic drop. When compared to the experimental groups, the control groups had considerably higher mean diastolic B.P. after intubation.

All three groups had similar mean SpO<sub>2</sub> at baseline. After medication, there was no significant difference in the mean SpO<sub>2</sub> between the control and study groups. There was also no statistically significant difference between the control and experimental groups in terms of the mean SpO<sub>2</sub> following intubation.

## DISCUSSION

Patients with penetrating eye injuries frequently experience full tummies. Succinylcholine, which has the potential to elevate IOP, aids in rapid sequence induction. Noxious stimuli, such as those utilized in laryngoscopy and endotracheal intubation during general anesthetic administration can cause a stress response and hemodynamic responses, such as an increase in heart rate, BP, IOP, and other symptoms. Although an increase in IOP is only transient and varies from person to person, it can be a serious and perhaps fatal problem in individuals with open globe injuries.

Rocuronium, like succinylcholine, has a rapid onset of action and causes muscle paralysis in the patient.

This is the single most important indication for the reduction of the increase in IOP and the hemodynamic response to laryngoscopy and intubation in patients scheduled for emergency ophthalmology procedures and patients with high IOP.

It would be ideal to have a medicine that prevents IOP from decreasing during succinylcholine laryngoscopy and intubation while having little effect on intubating conditions and cardiopulmonary parameters.

Since dexmedetomidine was only made available in India in 2009, there has not been much research done to see if it works for lowering IOP. As a result, studies were conducted to investigate the effects of dexmedetomidine on lowering IOP and moderating the hemodynamic response. Two groups received different dexmedetomidine premedication doses, whereas a third group received premedication with a placebo (normal saline). The study included 60 persons, with twenty in each of three groups.

#### Dose of dexmedetomidine employed and administered

A number of authors have employed varied dosages of dexmedetomidine during laryngoscopy and intubation to minimize the sympathetic response and increase IOP. In 2011, Pal et al.,<sup>10</sup> delivered two doses of dexmedetomidine subcutaneously over a 10-min period: 0.4 mcg/kg (group D4), 0.6 mcg/kg (group D6), or normal saline (group C). Rao and Sudhakar,<sup>11</sup> investigated the effects of dexmedetomidine in 2012, using a 1 mcg/kg loading dose followed by a continuous infusion of 0.5 mcg/kg/h. When HR and mean arterial pressure were 20% higher than baseline, the possibility of augmenting with end-tidal sevoflurane 1–2% was investigated. After the procedure, the extubation time and time it took to terminate the dexmedetomidine infusion were recorded. In a 2012 trial, Xulili et al., employed a dosage of 0.5 mcg/kg of body weight just 10 min before induction. In a 2014 study by Shalini et al.,<sup>12</sup> 50 people were divided into two groups and administered either 0.6 mcg/kg Dexmedetomidine (group D) or normal saline (group C) intravenously for 10 min before induction. In a 2015 study, Reddy et al.,<sup>13</sup> divided their patients into three groups: Group D was given 0.4 mcg/kg IV dexmed in 10 mL. Forty patients undergoing general anesthesia without preexisting eye disease were randomly premedicated with 0.3 mcg/kg i.v. dexmedetomidine or saline, and their IOP was measured before, during, and after succinylcholine administration and intubation (Ahmad et al., 2016; ref).<sup>14</sup> In a 2016 study by Yadav et al.,<sup>15</sup> Group 1 received 1 mcg/kg of dexmedetomidine in 100 mL of normal saline, Group 2

received 1 mcg/kg of clonidine in 100 mL of normal saline, and Group 3 received 100 mL of saline administered intravenously over 10 min as a placebo.

#### Method of administration

Dexmedetomidine was diluted to a concentration of 2 mcg/mL in 50 mL of normal saline and delivered during a 10-min period in this study. Rapid bolus dexmedetomidine delivery temporarily elevates BP and causes a reflex lowering of heart rate. This effect is caused by the stimulation of peripheral alpha 2 receptors in vascular smooth muscle, which can be minimized by delivering the drug slowly. As a result, the management strategy was similar to that used by Mowafi et al.,<sup>16</sup> in their study.

#### Timing of administration

The half-life of rapid dispersion of intravenous dexmedetomidine is approximately 6 min based on its recognized pharmacokinetics. Based on the drug's pharmacokinetic characteristics, patients were premedicated with dexmedetomidine for 10 min prior to induction to decrease the hemodynamic effects and increase in IOP associated with succinylcholine, laryngoscopy, and intubation.

#### Analysis of control and case populations

##### Change in IOP

There was no statistically significant difference between the groups in terms of age, gender, weight, height, BMI, time since operation, or ASA physical status. When we compare the mean baseline IOP of the control group (16.47 0.78 mmHg) to the D4 groups (16.44 0.74 mmHg) and the D6 groups (16.50 0.84 mmHg), we find that the D6 group has the highest IOP. All three groups began with equal IOP values. Premedication with normal saline resulted in an unchanged mean IOP of 16.440.78 mmHg in the control group. However, both groups' average IOP fell after pre-treatment with dexmedetomidine. D4 and D6 both have mean IOPs of 14.41 0.62 mmHg. After treatment, there was a statistically significant decrease in IOP ( $P=0.0001$ ). The control group's IOP dropped by 1.3 mmHg after taking thiopentone, to a mean of 15.1 0.6 mmHg. Thiopentone lowered IOP by a maximum of 20.1% in the D4 group and 23.0% in the D6 group, according to the study. Researchers have investigated how much IOP can be reduced by using dexmedetomidine, with varied degrees of success. Seluck et al., discovered a maximum drop of 28% after dosing 0.20 micrograms per kilogram per hour of dexmedetomidine.

##### Changes in pulse rate

At first, the two groups' average resting heart rates were comparable. The control group's heart rate fluctuated minimally after being premedicated with saline. However,

both research groups' heart rates reduced significantly following dexmedetomidine premedication. When compared to the D4 group, the D6 group had a statistically significant increase in lowered heart rate. Heart rates in the control group increased considerably after intubation, with the highest rise occurring shortly after. The findings of Aho et al.'s investigations. The study groups' heart rates increased as well, but the initial decrease in heart rate due to dexmedetomidine premedication significantly blunted the sympathetic response, such that a comparison of heart rates at different intervals up to 10 min after intubation revealed a statistically significant increase in the control group at all intervals.

Baser et al.,<sup>17</sup> detected a 10-beat increase in heart rate during laryngoscopy and intubation in the control group; in the dexmedetomidine group, this increase was reduced to 8 beats above baseline. However, our study found that the mean heart rate after intubation was higher than the baseline in both the D4 and D6 groups, despite the fact that dexmedetomidine reduced the increase in heart rate in the study groups. However, Aho et al., reported that the dexmedetomidine group exhibited an increase in heart rate compared to the control group.

#### **SBP shifts**

At the outset of the experiment, both the study and control groups had similar SBP. After intubation, the SBP increased significantly above the baseline (16 mmHg) and remained elevated for 15 min.

When compared to the control group, there was a statistically significant decline following dexmedetomidine premedication. The D6 group's SBP dropped significantly more than the D4 group's. Although SBP increased from the induction level immediately after intubation in the study groups, the increase was reduced as compared to the control group, and the difference was statistically significant. The D6 group, on the other hand, had a lower mean SBP reading following intubation than the D4 group. It was statistically insignificant. Aho et al., identified a statistically significant increase in BP of 40 mmHg in the control group and 18 mmHg in the dexmedetomidine group after intubation. This is consistent with our findings. After intubation, SBP increased by 18 mmHg in the control group but recovered to pre-intubation levels in the dexmedetomidine group.

#### **Changes in DBP**

At the start of the trial, all three groups had similar DBP. The drop in DBP following premedication was statistically significant in both groups when compared to the control group. D6 group individuals experienced a statistically significant decline in BP. Our findings agree with those of Aho et al., Kenya et al., and Kunisawa et al.

According to Jakkola et al.,<sup>18</sup> following intubation, DBP was significantly higher (16 mmHg) in the control group and significantly lower (-10 mmHg) in the dexmedetomidine group. This correlates with our D6 group rather than the D4 group. Premedication, thiopentone, succinylcholine, intubation, and surgery all resulted in similar decreases in SPO<sub>2</sub> over time in all three groups. I/V atropine bolus dose was utilized to treat bradycardia in one D4 group patient and two D6 group patients. Fluids and an intravenous ephedrine bolus were utilized to treat hypotension in 5 patients (1 in the control group, 2 in the D4 group, and 2 in the D6 group).

#### **Limitations of the study**

Patients with any contraindication to dexmedetomidine and succinylcholine are limitations to this study.

## **CONCLUSION**

Premedication with 0.4 mcg/kg I.V. or 0.6 mcg/kg I.V. of dexmedetomidine diluted in normal saline at a 2 mcg/ml concentration administered over 10 min before induction resulted in significant obtundation of the rise in IOP associated with succinylcholine administration and intubation. The sympathetic response to laryngoscopy and intubation was also significantly diminished. However, the dose of 0.4 mcg/kg I.V. produced the best hemodynamic stability. As a result, in circumstances where an increase in intraocular pressure could be hazardous, dexmedetomidine 0.4 mcg/kg I.V. as premedication prior to succinylcholine delivery and intubation can be used.

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