



COMPARISON OF TWO DIFFERENT DOSES OF DEXMEDETOMIDINE GIVEN BEFORE LARYNGOSCOPY AND ENDOTRACHEAL INTUBATION

Vaishali Gautam	M.D. Anaesthesiology Assistant Professor of Department of Anaesthesiology, Civil Hospital, BJ Medical college, Ahmedabad
Pushkar Desai*	Resident doctor Department of Anaesthesiology, Civil Hospital, BJ Medical College, Ahmedabad *Corresponding Author
Ravina Vinchhi	Resident Doctor Department of anaesthesiology, Civil Hospital, BJ Medical College, Ahmedabad
Sanket Karkar	Resident doctor Department of Anaesthesiology, Civil Hospital, BJ Medical College, Ahmedabad
Mehuli Shah	Resident doctor Department of Anaesthesiology, Civil Hospital, BJ Medical College, Ahmedabad

ABSTRACT Hemodynamic response to laryngoscopy and endotracheal intubation is very noxious, it may prove fatal in patients of coronary artery disease, in patients with less cerebral compliance. Alpha 2 receptor agonist, Dexmedetomidine attenuates the hemodynamic responses to laryngoscopy and intubation, in different doses. In which 0.6 microgram/kg dose of dexmedetomidine compared to 1 microgram/kg provides better attenuation of hemodynamic responses.

KEYWORDS : Dexmedetomidine, laryngoscopy, endotracheal intubation, hemodynamic response

AIMS :

To study the effect of two different doses of intravenous dexmedetomidine given before laryngoscopy and endotracheal intubation on hemodynamic responses (heart rate, systolic, diastolic blood pressure) in normotensive patient

INTRODUCTION :

During general anaesthesia, endotracheal intubation provides maximal protection against the aspiration of gastric contents by establishing a definitive airway. Endotracheal intubation is almost associated with hemodynamic changes like hypertension, tachycardia and arrhythmias.

Dexmedetomidine, alpha 2 agonist has been widely used to prevent this stress response to laryngoscopy and intubation as alpha 2 receptors are involved in regulating the autonomic and cardiovascular systems. Dexmedetomidine offers a unique advantage with sedation, sympatholysis, analgesia, cardiovascular stability and by avoiding respiratory depression in adult and paediatric patients. This study is to compare the effect of two different doses of dexmedetomidine for attenuating the hemodynamic response of laryngoscopy and endotracheal intubation.

MATERIALS AND METHODS :

Patients were randomly divided into 2 groups of 30 each, pre-operative evaluation done a day before surgery. With thorough history and detailed examination, all routine investigations like random blood sugar, CBC, renal and liver function tests, serum electrolytes, Chest X Ray, 12 lead ECG.

After arrival into operation theatre, IV access established. Patients pre-medicated with Inj. Glycopyrrolate 0.004mg/kg and Inj. Ondansetron 0.15mg/kg. Pulse rate, systolic and diastolic blood pressure, mean arterial pressure and spo2 were recorded.

Group A received Inj. Dexmedetomidine 0.6 microgram/kg and Group B received Inj. Dexmedetomidine 1 microgram/kg diluted in 100 ml NS given 10 minutes before induction. Patients were preoxygenated for 5 minutes using 100% O₂ with bain's circuit. Induction done by Inj. Propofol 2.5-3.5mg/kg and Inj. Succinyl choline 1-2 mg/kg. Intubation carried out with an appropriate size ET tube along with time monitoring of laryngoscopy. Anaesthesia maintained by 50% O₂, 50% N₂O, 1% Sevoflurane and Inj. Vecuronium 0.08mg/kg IV. After completion of surgery, patient was reversed using Inj. Glycopyrrolate 0.008mg/kg IV and Inj. Neostigmine 0.05mg/kg IV.

Parameters observed are ECG, Systolic and Diastolic blood pressure and pulse oximetry at 6 stages- Before pre-medication, after pre-

medication, on administration of study drug, after induction, at laryngoscopy and intubation, at 1,2,3,5, and 10 mins after intubation.

RESULTS :

Mean heart rate is comparable, as there is fall in heart rate after premedication with dexmedetomidine at the end of 10 minute, but Group A had statistically significant fall in heart rate compared to Group B.

Systolic BP between 2 groups was comparable. There is fall in systolic BP during induction and intubation in Group A compared to Group B which is statistically highly significant.

Diastolic BP is comparable, as there is fall in DBP in Group A, while rise in DBP in Group B which is highly significant.

DISCUSSION :

Endotracheal intubation and laryngoscopy provides an intense noxious stimulus via vagal and glossopharyngeal afferents that causes a reflex autonomic activation, that causes hyper tension and tachycardia in adults, and bradycardia in children. The hemodynamic responses seen within seconds of direct laryngoscopy and further increase with passage of endotracheal tube. Response is initiated within 5 s of laryngoscopy, peaks in 1-2 mins and returns to normal levels by 5 mins.

Dexmedetomidine, alpha 2 receptor agonist causes inhibition of norepinephrine release and brings about sedation, hypnosis. We have conducted a prospective and comparative study of effect of two different doses (0.6 microgram/kg v/s 1 microgram/kg) of Dexmedetomidine for attenuating the hemodynamic response of laryngoscopy and endotracheal intubation.

In this study, we divided 60 patients into 2 groups. All patients premedicated with inj. glycopyrrolate and inj. Ondansetron. In heart rate there is significant fall after infusion of dexmedetomidine at 1 microgram/kg compared to 0.6 microgram/kg. there was no rise in heart rate during study.

Group A showed highly statistically significant fall in Systolic BP compared to Group B.

Group A showed fall in Diastolic BP, on the other hand Group B showed rise in Diastolic BP which is statistically significant.

CONCLUSION :

This study showed that Dexmedetomidine at 0.6 microgram/kg loading dose provides significantly better attenuation of hemodynamic

responses of laryngoscopy and endotracheal intubation. Dexmedetomidine 0.6 microgram/ kg loading dose is unaccompanied by transient hypertension and bradycardia, which is observed at 1 microgram/kg loading dose.

Future scope :

various other drugs can be tried. Other concentration of dexmedetomidine can be tried.

REFERENCES :

- 1) Carin A, Hagberg Carlos A Airtime Airway Management in the adult. In: Miler's anaesthesia. 8th Ed. Elsevier Health; 2014
- 2) Reid Lc, Brace De. Irritation of Respiratory tract and its reflex effect on heart surgery gynecology obstetrics. 1940; 70: 157-62
- 3) King Bd, Harris Lc, Griefenstein Fe, Et Al. Reflex circulatory responses to direct laryngoscopy and tracheal intubation performed during general anaesthesia. Anaesthesiology 1951;12(5):556-66
- 4) Scheinin B, Lindgren L, Randell T, Scheinin M. Dexmedetomidine attenuates sympathoadrenal responses to tracheal intubation and reduces the need for thiopentone and preoperative fentanyl. Br J Anaesth 1992;68: 126-131.
- 5) Sebastian B, Talikoti At, Krishnamurthy D . Attenuation of hemodynamic responses to laryngoscopy and endotracheal intubation with intravenous Dexmedetomidine: a comparison between two doses, Indian J Anaesth 2017;61:48-54