VOLUME-8, ISSUE-2, FEBRUARY-2019 • PRINT ISSN No 2277 - 8160

Original Research Paper

Anaesthesiology

A STUDY OF COMPLICATIONS WHEN DIFFERENT DOSES OF DEXMEDETOMIDINE IS USED WITH PROPOFOL AS AN INDUCING AGENT

Dr Shruthi R Nayak Post-Graduate, Department of Anesthesiology, A.J.Institute of Medical Sciences, Mangalore.

ABSTRACT Dexmedetomidine a potent, highly selective α2 adrenoreceptor agonist possess desirable properties like sedation, analgesia, sympatholysis and reduces the anaesthetic requirement. Bradycardia and hypotension are the most common side effects of dexmedetomidine. Propofol, currently the most popular induction agent due to its beneficial effects such as suppression of airway reflexes, fast recovery etc has the same side effects during induction of anaesthesia. Hence this study was conducted with an objective of comparing and evaluating the effects of different doses of dexmedetomidine on induction dose of propofol and the complications arising from such combinations.

KEYWORDS : Complications, propofol, Dexmedetomidine

INTRODUCTION:

Dexmedetomidine a potent, highly selective α2 adrenoreceptor agonist possess desirable properties like sedation, analgesia, sympatholysis and reduces the anaesthetic requirement. Bradycardia and hypotension are the most common side effects of dexmedetomidine[1,2]. Propofol, currently the most popular induction agent due to its beneficial effects such as suppression of airway reflexes, fast recovery etc has the same side effects during induction of anaesthesia. Hence titration of the above mentioned drugs can minimize the adverse and retain the desired effects of their pairing[3,4,5s]. Various loading dosages of dexmedetomidine ranging from 0.33 to 1 µg/kg have been used pre-induction. Hence this study was conducted with an objective of studying the complications arising when dexmedetomidine is given with propofol as an induction agent.

AIMS AND OBJECTIVES:

To study the complications arising when dexmedetomidine is given with propofol as an induction agent.

MATERIALS AND METHODS:

This study was done in the Department of Anesthesia in A.J.Institute of Medical Sciences

This study was done using 60 patients. The study was done from July 2017 to June 2018.

They were divided into 4 groups
Group A received 1 µg/kg of dexmedetomidine.
Group B received 0.6 µg/kg of dexmedetomidine.
Group C received 0.3 µg/kg of dexmedetomidine.
Group D received 20 ml of normal saline.

INCLUSION CRITERIA

1. The patients were aged between 30-50 years
2. The patients had no co-morbidites

EXCLUSION CRITERIA

1. Aged below 30 and above 50 years
2. Patients with co-morbidities

All the statistics were done using the SPSS software 2015 (California)

RESULTS:

COMPLICATIONS

BRADYCARDIA

We noted bradycardia during laryngoscopy and intubation in 2 patients in group A (2%), 3 in group B (3%), 4 in group C (4%) and 1 patient in group D (1%). Following our protocol, we treated these patients with atropine.

DESATURATION

We noted a reduction in room air saturation during the study drug infusion in 1 patient in group A, two patients in group B and group C each. Administration of 100% oxygen via Bain's breathing system was sufficient to revert the drop in saturation and none of them required assisted for ventilation as per the protocol. None of these patients had loss of consciousness or airway compromise during this period of saturation drop.

INADEQUATE DEPTH OF ANAESTHESIA

We noted that muscle relaxation and depth of anaesthesia was inadequate in 3 patients in group A, 2 in group B, 3 in group C, 4 in group D who were excluded from analysis of hemodynamic variations. The patients moved during laryngoscopy and intubation in spite of achieving the loss of eyelash reflex and verbal response, a standard end point of titration for propofol induction. We had also used adequate 0.5 mg/kg of atracurium for muscle relaxation and laryngoscopy was performed after 3.5 minutes of drug administration. Additional doses of propofol were administered to these patients. The increased blood pressure and heart rate responded to this additional dose of propofol.

SECOND INTUBATION ATTEMPT

2 patients in group A, 2 patients in group B, 2 patients in group C, 4 patients in group D required a second attempt of laryngoscopy and intubation and hence were excluded from the study.

HYPERTENSION

Intraoperative hypertension was noted in one patient in group A which was seen after the time period of the study. The hypertension was treated with titrated doses of nitroglycerine. Transient hypertensive response has been observed with higher doses of (1 to 4 µg/kg) dexmedetomidine. This is attributed to initial stimulation of α2B receptors present in vascular smooth muscles.

HYPOTENSION

Intraoperative hypotension was noted in one patient in our study in group B. It was noted 40 minutes after intubation and treated with fluids and ephedrine 6mg bolus dose.

DISCUSSION:

A study noted bradycardia in 20% of their patients with bolus dose of dexmedetomidine 0.6 µg/kg pre induction followed by 0.2 µg/kg/hour infusion. This higher incidence in their study could be attributed to dexmedetomidine infusion following a bolus dose[4]. Another noted bradycardia intraoperatively needing atropine in two among 60 patients (6.6%) who had received dexmedetomidine 1µg/kg prior to induction. They did not observe any fall in BP. One patient out of these two, exhibited bradycardia in the postoperative period as well. Both the studies haven't specified if there was a preceding event leading to the bradycardia.[5]

A Study evaluated dexmedetomidine, for its ability to attenuate stress responses during emergence from anaesthesia after major

vascular operations. Patients were randomized to receive an IV infusion of dexmedetomidine or placebo starting 20 minutes before the induction of anaesthesia and continuing to 48 hours after surgery. They noted one episode of sinus pause during intubation lasting for 5 to 10 seconds that resolved spontaneously among 22 subjects.[6,7]

A Study conducted a study to determine the safety and efficacy of dexmedetomidine for procedural sedation in 669 children. They administered dexmedetomidine as an intravenous bolus (2 µg/kg) over a 10minute period followed by infusion at a rate of 1 µg/kg/hour. They noted in their study that six (0.9%) of them had brief periods of oxygen desaturation below 95% which did not require airway intervention[8].

A Study evaluated hemodynamic impact of dexmedetomidine administration in 15,656 non-cardiac surgical cases. They found that there was no significant difference in the overall incidence of intraoperative hypotension due to dexmedetomidine. Another noted hypotension in 13% of their patients who were treated with fluids and ephedrine. The increased incidence of hypotension in their study might be attributed to the fact that patients underwent thoracic surgery which could have been associated with substantial blood loss[8].

CONCLUSION:

Complications arise from such combinations but can be managed with proper training.

REFERENCES:

1. Arcangeli A, D Alo C, Gaspari R Dexmedetomidine Use in General Anaesthesia. Curr Drug Targets. 2009 Aug;10(8):687-95
2. Bekker A, Sturaitis MK. Dexmedetomidine for neurological surgery.. Neurosurgery. 2005 Jul;57(1 Suppl):1-10
3. Kaur M, Singh P M. Current role of dexmedetomidine in clinical anesthesia and intensive care. Anesth Essays Res 2011;5:128-33
4. Siobal MS, Kallet RH, Kivett VA, Tang JF. Use of dexmedetomidine to facilitate extubation in surgical intensive-care-unit patients who failed previous weaning attempts following prolonged mechanical ventilation: A pilot study. Respir Care 2006;51:492-6.
5. Ebert TJ, Hall JE, Barney JA, Uhrich TD, Colinco MD. The effects of increasing plasma concentrations of dexmedetomidine in humans. Anesthesiology 2000;93:382-94
6. Talke P, Chen R, Thomas B, Aggarwall A, Gottlieb A, Thorborg P et al. Effects of perioperative dexmedetomidine infusion in patients undergoing vascular surgery. The Study of Perioperative Ischemia Research Group. Anesth Analg. 2000 Apr;90(4):834-9.
7. Ingersoll-Weng E, Manecke GR Jr, Thistlethwaite PA. Dexmedetomidine and cardiac arrest. Anesthesiology. 2004 Mar;100(3):738-9
8. Afsani N.Clinical application of dexmedetomidine. S Afr J Anaesthesiol Analg 2010;16(3):50-56