



ORIGINAL RESEARCH PAPER

Medical Science

**A STUDY OF BRUSSELS SEDATION SCALE WHEN DIFFERENT DOSES OF DEXMEDETOMIDINE IS USED WITH PROPOFOL AS AN INDUCING AGENT**

**KEY WORDS:** Brussel's sedation scale, Dexmedetomidine, Propofol.

**Dr Dhananjaya K S**

Post-Graduate, Department of Anesthesiology, A.J.Institute of Medical Sciences, Mangalore.

**ABSTRACT**

Dexmedetomidine is used with propofol as an inducing agent nowadays very commonly. This study puts in an effort to find the mean brussels sedation scale when different doses of dexmedetomidine is used with propofol as an inducing agent to understand and use the drug more effectively.

**Introduction:**

Ashraf Ghali and co-workers evaluated the hemodynamic effects, respiratory effects and recovery profile with dexmedetomidine and propofol used for sedation in patients undergoing vitreoretinal surgery. They noted that the time requirement of 20.36±4.66 minutes in dexmedetomidine group from initiating the infusion to achieve targeted levels of sedation (Ramsay Score of 3 responsive to commands).<sup>1</sup> Few studies have described deep sedation corresponding to Ramsay Score of 5 (asleep, sluggish response to glabellar tap or auditory stimulus) in children.<sup>2</sup> The general consensus seems to be that dexmedetomidine is not suitable to achieve deep sedation.<sup>3-6</sup> In another study the authors observed very few subjects who were deeply sedated. Patients who were sedated and arousable only by painful stimuli (sedation score=3) accounted for 13 % of the subjects in group A and 5% in group B. Only 0.25% of the entire study population (1% of group A) were not arousable even to painful stimuli at the end of infusion (sedation score=1). They however had no delay in recovery at the end of the surgical procedure. An author in his study reported a series of three cases where they used dexmedetomidine as a total intravenous anaesthetic agent. They administered dexmedetomidine as a loading dose of 1µg/kg followed by an infusion of 0.7 µg/kg/hour<sup>7</sup>. The infusion was increased to 5 µg/kg/hour for a period of five minutes to achieve adequate depth. In one case they needed to increase the dose to 10 µg/kg/hour for a short period of time to achieve adequate depth. At such high doses they noted that dexmedetomidine could be used as a sole anaesthetic agent. However routine use of such high doses are not recommended as they may be associated with adverse effects<sup>8,9</sup>.

**Aims and Objectives:**

To study the brussels sedation scale when different doses of dexmedetomidine is used with propofol as an inducing 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.

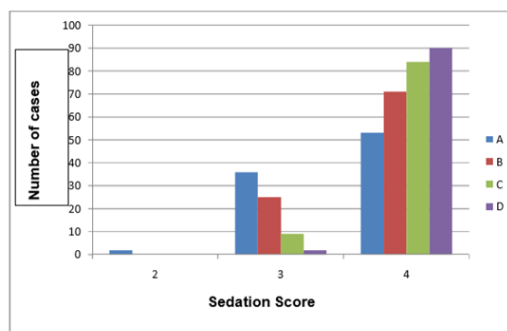
They were divided into 4 groups

- 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.

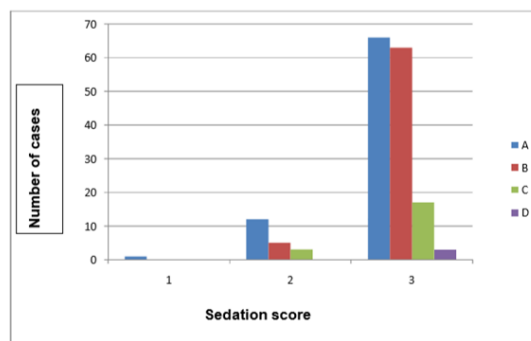
The Brussel's sedation scale was tested at the end of 10 minutes and at the end of 20 minutes.

**Results:**

**Graph 1: Brussel's Score at 10 minutes**



**Graph 2: Brussel's Score at 20 minutes**



**Discussion:**

Brussels Sedation Scale at end of 10 minutes showed significantly different scores in the four groups (p<0.001). 2.2% of subjects in group A were deeply sedated and responded only to painful stimuli (score=2) whereas group B, C, D did not have any patient with score of 2 at 10 minutes. 39.6% of people in group A were sedated but arousable with verbal stimuli (score=3), compared to 26% in group B, 9.7% in group C and 2.2% in group D. At the end of ten minutes, 58.2%, 74%, 90.3%, 97.8% of the patient were awake (score=4) in group A, B, C and D respectively.

Sedation assessed by Brussels Sedation Scale at the end of 20 minutes, was significantly different in the four groups (p<0.001). In group A, 1.1% of the subjects were not arousable (score=1) whereas none of the subjects in other groups had a score of 1. In group A, 13.2% of subjects and in group B, 5.2% were deeply sedated and responded only to painful stimuli (score = 2). No patients in group C and D had a score of 2. 72.5% of people in group A were sedated but arousable with verbal stimuli (score=3) compared to 65.6% in group B, 18.3% in group C, 3.3% in group D. Number of subject who were awake (score=4) at end of ten minutes were 13.2% in group A, 29.2% in group B, 78.5% in

group C and 96.7% in group D.

**Conclusion:**

Brussels Sedation Scale at end of 10 minutes and at the end of 20 minutes showed significantly different scores in the four groups

**REFERENCES:**

1. Ghali A, Mahfouz AK, Ihanamäki T, El Btarny AM. Dexmedetomidine versus propofol for sedation in patients undergoing vitreoretinal surgery under sub-Tenon's anesthesia. *Saudi J Anaesth*. 2011 Jan;5(1):36-41
2. Dave J, Vaghela Sandip. A comparison of the sedative, hemodynamic, and respiratory effects of dexmedetomidine and propofol in children undergoing magnetic resonance imaging *Saudi J Anaesth*. 2011 Jul-Sep; 5(3): 295–299.
3. Stephan M, Jakob, Esko Ruokonen, R. Michael Grounds, Toni Sarapohja, Chris Garratt, Stuart J. Pocock et al Dexmedetomidine vs midazolam or propofol for sedation during prolonged mechanical ventilation: two randomized controlled trials. *JAMA*. 2012 March 21; 307(11): 1151–1160
4. Basar H, Akpınar S, Dogancı N, Buyukkocak U, Kaymak C, Sert O et al The effects of preanesthetic, single-dose dexmedetomidine on induction, hemodynamic, and cardiovascular parameters. *J Clin Anesth*. 2008 Sep;20(6):431-6
5. Feng X, Weixiu Yuan, Tianlong Wang. The effects of pre-anesthetic single-dose dexmedetomidine on attenuation of stress response to endotracheal intubation. The Scientific Meeting International Society for Anaesthetic Pharmacology 2012.
6. Adachi YU, Satomoto M, Higuchi H, Watanabe K. Fentanyl attenuates the hemodynamic response to endotracheal intubation more than the response to laryngoscopy. *Anesth Analg* 2002;95:233–7
7. Kaymak C, Basar H, Dogancı N, Sert O, Apan A. The Effects of Perioperative Low - Moderate Doses of Dexmedetomidine Infusion on Hemodynamic and Neuroendocrine Parameters. *Turk J Med Sci* 2008; 38(1): 65-71
8. Pipanmekaporn T, Punjasawadwong Y, Charuluxananan S, Lapisatepun W, Bunburaphong P. The Effect of Prophylactic Dexmedetomidine on Hemodynamic Disturbances to Double-Lumen Endotracheal Intubation: A Prospective, Randomized, Double-Blind, and Placebo-Controlled Trial. *Anesthesiol Res Pract*. 2013;2013:236-89.
9. Mason KP, Robinson F, Fontaine P, Prescilla R. Dexmedetomidine Offers an Option for Safe and Effective Sedation for Nuclear Medicine Imaging in Children *Radiology*. 2013 Jun;267(3):911-7