INTRODUCTION

Hemodynamic pressor response to laryngoscopy and endotracheal intubation provokes tachycardia and hypertension that can lead to many adverse events in patients with cardiovascular disease [1].

Dexmedetomidine, an imidazole derivative and highly selective α2-adrenergic receptor agonist, is being used widely to attenuate hemodynamic responses [2-4]. Pregabalin has analgesic, anticonvulsant, and anxiolytic effects [5,6]. Several studies have demonstrated the efficacy of oral pregabalin on post-operative analgesia and reduction of parenteral analgesics [7-9]. Oral pregabalin attenuates pressor response to laryngoscopy and endotracheal intubation [10,11].

The aim of this study was to compare the efficacy of intravenous dexmedetomidine and oral pregabalin in attenuating hemodynamic response to laryngoscopy and endotracheal intubation.

METHODS

The study was conducted after obtaining approval from Institutional Ethical Committee and informed patients consent during the period of July 2014-October 2015. This prospective, randomized, double-blinded controlled study was conducted on 60 patients of age group 20-50 years scheduled for elective surgeries under general anesthesia with American Society of Anesthesiologists physical Status I and II. Patients with a history of the cardiac, pulmonary or renal disease, obesity, anticipated difficult intubation, allergic to any anesthetic medication, pregnancy, lactating and patients who were taking sedatives, hypnotics or antihypertensives were excluded from the study. We also excluded cases where laryngoscopy exceeded 20 seconds or a second attempt was needed. Both patients and observer were totally blind about the groups and medications given.

In the pre-operative room, baseline heart rate (HR) along with systolic, diastolic, and mean arterial blood pressure was recorded. Patients were randomly divided into two groups each of 30 patients by computer-generated random table. Group D received intravenous dexmedetomidine 1 mcg/kg over 15 minutes before induction, and Group P received oral pregabalin 150 mg 1 hr before intubation. A crystalloid intravenous fluid was started, and all the patients were premedicated with intravenous ranitidine (50 mg), ondansetron (8 mg), midazolam (1 mg), and glycopyrrolate (0.2 mg). After pre-oxygenation for 3 minutes with 100% oxygen, anesthesia was induced with propofol (2 mg/kg) or in a dose sufficient for loss of verbal commands. The direct laryngoscopy and intubation were facilitated with vecuronium 0.1 mg/kg. Intravenous fentanyl 2 µg/kg was administered 15 minutes after intubation to avoid its effect on hemodynamic response. Anesthesia was maintained with isoflurane and nitrous oxide 60% in oxygen. Patients were mechanically ventilated to maintain the normocapnia. After completion of surgery, residual neuromuscular block was antagonized with appropriate intravenous doses of neostigmine (0.05 mg/kg) with glycopyrrolate (0.01 mg/kg), and extubation was performed when respiration was spontaneous and adequate.

Parameters observed were HR and mean arterial pressure (MAP) at baseline, after induction, immediately after intubation and then 5, 10, 15, and 30 minutes thereafter. Decrease in MAP by more than 20% from baseline or systolic arterial pressure <90 mm Hg was treated by increasing the intravenous fluid infusion rate or incremental doses of ephedrine 5 mg IV bolus. Decrease in HR (<50 beats/minutes) was treated with atropine 0.5 mg IV.

Statistical analysis

The sample size was calculated by power analysis (power 80% and α error 0.05) from initial pilot studies. The calculated sample size for
have shown that oral pregabalin and clonidine have
attenuated hemodynamic response to laryngoscopy and intubation. Attenuation of HR in group dexmedetomidine (78.12±10.0/minutes) immediately after intubation was statistically significant than group pregabalin (89.76±10.45/min)utes) (Table 2). MAP significantly (p<0.05) decreased after intubation with dexmedetomidine as shown in Table 3. As compared to oral pregabalin, attenuation of HR and MAP was statistically significant till 30 minutes after intubation with intravenous dexmedetomidine. No post-operative respiratory depression, nausea, and vomiting were found, and no other post-operative complication was recorded in any group during our study.

**DISCUSSION**

Attenuation of the sympathoadrenal stress response is important especially in high-risk patients [12]. Various methods such as α or β adrenergic blockers, opioids, topical or systemic lignocaine are being used to attenuate hemodynamic response [13-15]. Dexmedetomidine possesses adyoletic, sedative, analgesic, and sympatholytic properties. It may be used as premedicant, adjunct to balanced anesthesia as it remarkably reduces anxiolytic, sedative, analgesic, and sympatholytic properties. It may be used as premedicant, adjunct to balanced anesthesia as it remarkably reduces anxiolytic, sedative, analgesic, and sympatholytic properties.

The previous study has shown that oral pregabalin at dose 75 mg was not effective in attenuating pre-operative anxiety and at a dose of 300 mg produced increased level of sedation after surgery [18]. Based on the result of the previous study, the dose of pregabalin was chosen as 150 mg [10].

Chaudhary et al. have shown that oral pregabalin and clonidine have both effectively blunt hemodynamic pressure response to laryngoscopy without prolongation of recovery time and side effects [19]. It is found that intravenous dexmedetomidine is more effective in attenuating the hemodynamic response to laryngoscopy and intubation than other agents [3,20-22].

When assessing techniques to lessen the hemodynamic pressor responses of airway instrumentation, the induction agents may influence the results. We have used propofol as an induction agent, which produces hypotension more than thiopental and bradycardia, which has helped to compensate in part the hemodynamic changes induced due to laryngoscopy and intubation in all patients [23]. The salivary and tracheobronchial mucous secretions necessitate prophylactic administration of intravenous glycopyrrolate.

The limitation of the study was that sedation score and recovery time was not compared.

**CONCLUSION**

Intravenous dexmedetomidine 1 µg/kg is more effective than oral pregabalin 150 mg in attenuating hemodynamic response to laryngoscopy and orotracheal intubation.

**REFERENCES**

22. Gulabani M, Gurha P, Dass P, Kulshresthita N. Comparative analysis of efficacy of lignocaine 1.5 mg/kg and two different doses of dexmedetomidine (0.5 μg/kg and 1 μg/kg) in attenuating the hemodynamic pressure response to laryngoscopy and intubation. Anesth Essays Res 2015;9(1):5-14.