Comparison Of Clonidine Versus Nitroglycerin Infusion In Interscalene Brachial Plexus Block For Shoulder Arthroscopy

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ABSTRACT

Objective: To compare tablet clonidine and nitroglycerin infusion with brachial plexus block for shoulder arthroscopic cuff repair or Bankart's repair. **Materials & Method:** The present three year prospective study was conducted in arthroscopy unit of a corporate hospital at Vadodara, Gujarat in which 40 patients were studied to compare the effect of tablet clonidine and nitroglycerin infusion in brachial plexus block for shoulder arthroscopic cuff repair. **Results:** The patients selected for the study belonged to the age group of 18-60 years. All the patients were hemodynamically stable, fully conscious and had more than 12 Fastrack Score. **Conclusion:** Tablet clonidine in combination with propofol infusion provides very safe anesthesia with regional block. Nitroglycerin infusion causes tachycardia and may cause rebound hypertension in rare cases.

Key-words: Interscalene Brachial plexus block, Arthroscopy, Clonidine, Nitroglycerin, Cuff repair.

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INTRODUCTION

In anesthesiologists' practice, upper extremity neural blockade is the most frequently used peripheral nerve blocks.[1] Interscalene brachial plexus block is widely used for the various shoulder surgeries like arthroscopy[2] and the various methods to improve its effectivity has been evaluated by the different authors.[3-6] The clinical evaluation of post-operative analgesia in suprascapular nerve block and interscalene brachial plexus block in patients undergoing shoulder arthroscopic surgery has been compared by Kumara et al also.[7] For patients undergoing arthroscopic shoulder cuff repair or bankart repair hypotension is a must for surgery and anaesthesia and hence it is important for the anaesthesiologist also. The present study was undertaken to compare the effect of tablet clonidine and nitroglycerin infusion in brachial plexus block for shoulder arthroscopic cuff repair. This study is particularly significant in practice of anesthesia because it is the first in India and to compare the effect of tablet clonidine and nitroglycerin infusion in brachial plexus block for shoulder arthroscopic cuff repair.

MATERIALS AND METHODS

The present prospective and experimental study was conducted in arthroscopy unit of a corporate hospital at Vadodara, Gujarat during 2012-2014 in which 40 patients were

studied to compare the effect of tablet clonidine and nitroglycerin infusion in brachial plexus block for shoulder arthroscopic cuff repair. The patients who were brought to us for shoulder arthroscopy were selected randomly for this study and all the patients belonged to population of Vadodara between age group of 18-60 years. The aim of this study was to use medicines in adjunct to regional anaesthesia to get desired surgical field and hypotension for shoulder arthroscopy surgery. All the patients of ASA grading 1 and 2 posted for shoulder arthroscopy were studied and the patients who were having any respiratory condition like COPD, pneumothorax or myasthenia gravis were excluded from this study. The informed consent was taken from all the patients before starting the procedure and patients were explained regarding the side effects of interscalene block for example phrenic nerve palsy, stellate ganglion block recurrent laryngeal nerve block, etc.

Procedure: All patients were premedicated with injection glycopyrrolate, ranitidine and ondensetron and both groups of patients were given injectable paracetamol 1 gm and diclofenac sodium 75 mg intraoperatively. The patients were divided into two groups of 20 for comparison and in Group-A, 20 patients were given tablet clonidine 0.1 mg with sips of water half an hour before block and surgery and were supplemented with Propofol infusion at 100-150 mcg/ kg/min for sedation. In Group-B, 20 patients were taken into the operation theatre given block and then nitroglycerin infusion was started immediately. These patients were sedated with injection Butorphanol 0.02 mg/kg. All 40 patients were given interscalene block using Modified Winnie technique in which patient lies supine with head turned slightly to the opposite side. The posterior border of sterno cliedomastoid muscle was identified at the level of cricoid [C6] cartilage. The groove between scalene anterior and medial scalene muscle was palpated and at level of C6 skin was infiltrated with 2 ml of lignocaine HCL 2% with 5 cm short bevelled needle at angle of 30^0 to the skin. The blocks were given with 15 ml of 2% lignocaine HCL with 15 ml of 0.5% Bupivacaine HCL and 10 ml sterile water. In both groups, surgical duration was maximum of 2 hours and blood pressure was maintained at about 100-110 mmHg systolic. Attainment of hypotension of 100-110 mmHg systolic BP for proper field for arthrosopy was considered as major criteria in this study. In Group-A propofol infusion was stopped after skin sutures were taken and in Group-B nitroglycerin infusion was tapered gradually after completion of surgery and then eventually stopped. The results were compared on the basis of hypotensive field and Fast Track Score (by White and Song).[8] The data were collected and analyzed to compare the effect in both Group-A & B and the conclusions were drawn.

Table-1: Fastrack Criteria {According To White And Song}

Criteria	Score	
1.Level Of Consciousness	* Awake And Oriented * Arousable On Minimal Stimuli * Arousable On Tactile Stimuli	2 1 0
2.Physical Activity	* Able To Move All Four Limbs On Command * Some Weakness In Movement Of Extremities * No Movement Voluntarily	2 1 0
3.Hemodynamic Stability	* Blood Pressure < 15% Of Baseline Map Value * Blood Pressure 15-30% Of Baseline Map Value * Blood Pressure > 30% Of Baseline Map Value	2 1 0
4.Respiratory Stability	* Able To Breathe Deeply *Tachypnoea With Good Cough * Dyspnoeic With Weak Cough	2 1 0
5.Oxygen Saturation Status	* Maintains > 90% On Room Air *Requires Oxygen Supplementation * <90% With Supplemental Oxygen	2 1 0
6.Postop Pain	* None Or Mild Discomfort * Moderate To Severe Pain.Controlled With Iv Analgesics * Persistent Severe Pain	2 1 0
7.Postop Emetic Symptoms	* None Or Mild Nausea With No Vomiting * Transient Nausea Or Vomiting * Persistent Moderate To Severe Nausea Or Vomiting	2 1 0
Total		**14**

Table-2: Duration after which the desired hypotension was achieved

	0.5 Hr	1 Hr	1.5 Hr	2 Hr
Group A	8	20	20	20
Group B	14	20	20	20

RESULT

In our study, all the patients were hemodynamically stable, fully conscious and had more than 12 Fastrack Score. Both Groups-A & B were analyzed after comparision and we observed that the Group-A patients were hemodynamically stable and achieved the desired hypotension after about 30 mins and did not have any tachycardia intraoperatively or postoperatively. Group-B patients achieved desired hypotension early but had increase in pulse rate both inrtraoperatively and postoperatively and rebound hypertension was seen in 2 patients.

DISCUSSION

The use of regional anesthesia is increasing in practice of anesthesia due to its advantage of shorter recovery room stay, improved pain ratings, and decreased narcotic use.[9] Interscalene brachial plexus block is one of the common technique widely used during the shoulder surgeries[10] and many successful models of ambulatory day care surgery for total shoulder arthroplasty have been reported.[11] In this study, we have tried to compare the efficacy of use of tablet clonidine and nitroglycerin infusion with brachial plexus block for shoulder arthroscopic cuff repair and we noticed that the patients who were given clonidine tablets were hemodynamically stable and achieved the desired hypotension after about 30 mins and did not show any tachycardia intraoperatively or postoperatively while the other patients who were given nitroglycerene infusion achieved desired hypotension early but had increase in pulse rate both inrtraoperatively and postoperatively and rebound hypertension was seen in 10% cases. The shoulder arthroscopy is not a common surgical procedure in India and hence the number of cases in our study were less as we expected during the three years span of this study. We could not compar our

observations with other authors due to the reason of unavailability of any such similar study done previously in India or elsewhere. Our study shows that the use of clonidine in combination with propofol infusion is safe as compared to the use of nitroglycerene, which causes tachycardia and rebound hypertension.

CONCLUSION:

This study is particularly significant in practice of anesthesia because it is the first of its kind and itself is a bench mark to compare the effect of tablet clonidine and nitroglycerin infusion in brachial plexus block for shoulder arthroscopic cuff repair. Henceforth many more such researchs and analysis in future shall bring about a lot of knowledge, coverage and conclusion based on this topic and then we shall be able to procure a comprehensive data for efficient comparison in studies. Tablet clonidine in combination with propofol infusion provides very safe anaesthesia with regional block as compared to the other method e.g. nitroglycerin infusion, which causes tachycardia and may cause rebound hypertension in rare cases.

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