

Original Research Article

# CLINICAL EVALUATION OF TWO DIFFERENT DOSES OF CLONIDINE IN SURGERIES UNDER SUBARACHNOID BLOCK WITH 0.5% HYPERBARIC BUPIVACAINE ON POST-OPERATIVE ANALGESIA

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## Abstract

**Background & Methods:** The aim of the study is to study the effect of clonidine 15 and 30mcg dose added to 0.5% hyperbaric bupivacaine in influencing onset and duration of sensory and motor block, and in prolonging duration of analgesia in sub-arachnoid block in lower abdominal, perineal and lower limb surgeries.

**Results:** GROUP A: patients who received 18 mg of hyper baric bupivacaine with 15 µ of clonidine. GROUP B: patients who received 18 mg of hyper baric bupivacaine with 30 µ of clonidine.

**Conclusion:** Addition of clonidine to hyperbaric bupivacaine is effective and efficient in lower abdominal and inferior extremity, general surgeries and gynecological surgeries. Clonidine 15 mcg and 30 mcg used as an adjuvant to hyperbaric bupivacaine for subarachnoid block, specially the dose of 30 mcg is associated with effective and efficient sensory and motor block with a prolonged duration of post-operative analgesia with least disturbances in vital parameters.

Both the doses of clonidine (15 mcg and 30 mcg) are effective as an adjuvant to the hyperbaric bupivacaine for subarachnoid block but 30 mcg is more effective and reliable.

**Keywords:** Clinical, clonidine, subarachnoid, bupivacaine & analgesia.

**Study Design:** Observational Study.

## 1. Introduction

A pain-free and stress-free post-operative period helps in early mobilization and recovery. Providing the patient adequate analgesia intraoperatively and postoperatively has been a topic of continuous research[1]. Duration of analgesia is limited by the local anaesthetic used in subarachnoid block for below umbilical surgeries. Inj. Bupivacaine is appropriate for

procedures lasting 2-2.5 hrs. The duration of analgesia can be extended to postoperative period by addition of adjuvants. Clonidine is sedative and analgesic and its effect is mediated via pre and post synaptic mechanism.

It has been observed in previous studies that intrathecal clonidine, as an adjuvant enhances effect of local anaesthetic drug and provide good intraoperative analgesia & prolongs post-operative analgesia[2].

Patients undergoing these surgeries are often elderly and have associated co-morbid conditions. Their autonomic homeostasis is impaired and compensatory haemodynamic responses are reduced leading to increased incidence of systemic hypotension and bradycardia than the younger population [3]. The anatomical and physiological changes due to ageing lead to altered nerve block characters following spinal anaesthesia. The maximal height of subarachnoid block has been shown to increase with age when using hyperbaric bupivacaine [4].

Even epidural anaesthesia requires the administration of a considerable amount of local anaesthetic medication, which results in pharmacologically active systemic blood levels, which may cause side effects and problems rarely seen with spinal anaesthesia [5]. Bupivacaine has a stabilising impact on all excitable membranes as a result of its pharmacological actions. It produces a different clinical profile of nerve blockage than lignocaine. It is four times more powerful than lignocaine and produces a more pronounced sensory block than lignocaine[6-7].

#### **OBJECTIVES:**

1. To observe the effect of clonidine 15mcg and 30mcg with 0.5% hyperbaric bupivacaine in subarachnoid block on post-operative analgesia.
2. To study the onset and duration of sensory and motor block.
3. Side-effects if any

#### **2. Material and Methods**

Detailed physical and systemic examination of the patients was done along with necessary investigations pre-operatively. Patients were kept NBM after 10pm and etizolam was given orally H.S., IV line secured. Procedure was explained to the patient and pre-op vitals were recorded. Under all aseptic precautions spinal anaesthesia was administered with inj. Bupivacaine 3.6ml along with 15mcg and 30mcg Clonidine as per assigned group.

10 degree tilt was given to all patients and patients were oxygenated @4L/min via facemask. Vitals were monitored and documented in proforma.

#### **3. Result**

##### **Table 1: Onset of Sensory Block**

GROUP A: patients who received 18 mg of hyper baric bupivacaine with 15  $\mu$  of clonidine.

GROUP B: patients who received 18 mg of hyper baric bupivacaine with 30  $\mu$  of clonidine.

	Group				P
	Group A		Group B		
	Mean	SD	Mean	SD	
Onset of sensory block(sec)	305.0	6.4	279.0	8.1	0.000

**Table 2: Onset of Motor Block**

	Group				p
	Group A		Group B		
	Mean	SD	Mean	SD	
Onset of motor block(sec)	352.3	19.6	317.3	19.6	0.000

Results were obtained after analysing data via SPSS software using quantitative variables paired t test for two group comparisons and categorical data were analyzed by chi square test. P value of <0.05 was considered significant.

**Table 3: Duration of Sensory Block**

	Group				P
	Group A		Group B		
	Mean	SD	Mean	SD	
Duration of Sensory block(min)	237.0	22.1	408.5	27.9	0.000

**Table 4: Duration of Motor Block**

	Group				p
	Group A		Group B		
	Mean	SD	Mean	SD	
Duration of Motor block(min)	153.9	13.4	207.1	13.6	0.000

**Table 5: Duration of Analgesia**

	Group				T	p
	Group A		Group B			
	Mean	SD	Mean	SD		
Duration of Analgesia(min)	297.51	25.21	447.43	25.81	24.582	0.000

#### 4. Discussion

Onset of sensory block is rapid with the dose of 30 mcg of clonidine in subarachnoid block. Onset of motor block is rapid with the dose of 30 mcg of clonidine in subarachnoid block. Duration of sensory block is prolonged with 30 mcg of clonidine. Duration of motor block is prolonged with 30 mcg of clonidine. Postoperative analgesia is significantly prolonged with 30 mcg of clonidine. Vital parameters as mean arterial pressure, pulse rate, respiratory rate were found to be in normal range in both the study groups. Complications and side effects i.e. hypotension bradycardia found but easily manageable by vasopressors and atropine. Nausea and vomiting and shivering are not associated with the addition of clonidine with hyperbaric bupivacaine in subarachnoid block.

#### 5. Conclusion

Addition of clonidine to hyperbaric bupivacaine is effective and efficient in lower abdominal and inferior extremity, general surgeries and gynecological surgeries[8]. Clonidine 15 mcg and 30 mcg used as an adjuvant to hyperbaric bupivacaine for subarachnoid block, specially the dose of 30 mcg is associated with effective and efficient sensory and motor block with a prolonged duration of post-operative analgesia with least disturbances in vital parameters[9]. Both the doses of clonidine (15 mcg and 30 mcg) are effective as an adjuvant to the hyperbaric bupivacaine for subarachnoid block but 30 mcg is more effective and reliable[10].

## 6. References

1. Sethi BS, M Samuel, Sreevastava D. Efficacy of analgesic effects of low dose intrathecal clonidine as adjuvant to bupivacaine. *Indian J Anaesth.* 2007; 51:415–9.
2. Singh R B, Chopra N, Choubey S, Tripathi R K, Prabhakar, Mishra A. Role of clonidine as adjuvant to intrathecal bupivacaine in patients undergoing lower abdominal surgery: A randomized control study. *Anesth Essays Res.* 2014;8:307–12.
3. Strebel S, Gurzeler AJ, Schneider CM, Aeschbach A, Kindler CH. Small-dose intrathecal clonidine and isobaric bupivacaine for orthopedic surgery: A dose response study. *Anesth Analg.* 2004; 99:1231–8.
4. Niemi L. Effects of intrathecal clonidine on duration of bupivacaine spinal anaesthesia, haemodynamics, and postoperative analgesia in patients undergoing knee arthroscopy. *Acta Anaesthesiol Scand.* 1994; 38:724–8.
5. Yang CW, Cho CK, Kwon HU, Roh JY, Heo YM, Ahn SM. Ultrasound-guided supraclavicular brachial plexus block in pediatric patients – A report of four cases. *Korean J Anesthesiol.* 2010;59:S90–4.
6. Swain A, Nag DS, Sahu S, Samaddar DP. Adjuvants to local anesthetics: Current understanding and future trends. *World J Clin Cases.* 2017;5:307–23.
7. Marhofer P, Columb M, Hopkins PM, Greher M, Marhofer D, Bienzle M, et al. Dexamethasone as an adjuvant for peripheral nerve blockade: A randomised, triple-blinded crossover study in volunteers. *Br J Anaesth.* 2019;122:525–31.
8. Wajekar AS, Oak SP, Shetty AN, Jain RA. A prospective, comparative, randomised, double blind study on the efficacy of addition of clonidine to 0.25% bupivacaine in scalp block for supratentorial craniotomies. *Indian J Anaesth.* 2016;60:39–43.
9. Wong-Baker FACES Foundation. Wong-Baker FACES® Pain Rating Scale. 2018. [Last assessed on 2021 Apr 07].
10. Craig D, Carli F. Bromage motor blockade score – A score that has lasted more than a lifetime. *Can J Anaesth.* 2018;65:837–8.