



A COMPARISON OF BLOCK CHARACTERISTICS OF SUBARACHNOID HYPERBARIC BUPIVACAINE WITH DEXMEDETOMIDINE VERSUS HYPERBARIC BUPIVACAINE ALONE IN LOWER LIMB SURGERIES.

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ABSTRACT

Introduction: Adjuvants like fentanyl, clonidine, dexmedetomidine etc are in use with Bupivacaine in subarachnoid block to reduce the dose and side effects of Bupivacaine with prolongation of duration of block. However, literature has divided opinion regarding efficacy and adverse effects of these intrathecal adjuvants. So, search of a better adjuvant goes on. **Aim:** The aim of study was to evaluate the efficacy of Dexmedetomidine as adjuvant with intrathecal Bupivacaine for lower limb surgeries. **Materials And Methods:** The study was a double blinded randomised controlled one in which 80 patients posted for lower limb surgeries were divided into two groups of forty each. Group D – received intrathecal hyperbaric Bupivacaine (2.5 ml) + 5µg Dexmedetomidine (Dexit 50 µg/0.5 ml). 0.5 ml Dexmedetomidine was diluted to 5 ml with normal saline and 0.5 ml of this was added to 2.5 ml of 0.5% hyperbaric Bupivacaine. Total volume of drug was 3 ml. Group B – received 2.5 ml of 0.5 % hyperbaric Bupivacaine with 0.5 ml normal saline. Total volume of drug was 3 ml. Sensory and motor block characteristics, time of first dose of post operative rescue analgesia and side effects were recorded and analysed. **Result :** we observed early onset of sensory block with prolonged duration of sensory and motor block in group D in comparison with group B. Time for first dose of rescue analgesia was delayed in group D as compared to group B which was statistically significant (P<0.001). **Conclusion :** We recommend the use of 5 µg Dexmedetomidine as adjuvant to Bupivacaine heavy for better block characters in lower limb surgeries.

KEYWORDS : Bupivacaine, Dexmedetomidine, Intrathecal

INTRODUCTION

Spinal anesthesia is preferred method for lower limb surgeries as it has rapid onset, decreased intraoperative blood loss, reduced incidence of deep venous thrombosis, self controlled airway and less polypharmacy [1]. However, it produces a fixed duration of anesthesia and analgesia with hemodynamic side effects [2]. A number of adjuvants like Clonidine, Dexmedetomidine, Neostigmine, opioids etc [3,4,5] have been tried but all have some side effects.

Alpha -2-agonists like Dexmedetomidine, act on pre-junctional and post-junctional alpha -2 receptors in the dorsal horn of the spinal cord. Activation of presynaptic receptors reduces neurotransmitter release whereas post synaptic receptor activation result in hyperpolarisation and reduction of pulse transmission. In this regard, various authors have studied Dexmedetomidine in the role of adjuvant [6,7]. In this study Dexmedetomidine has been evaluated as adjuvant to hyperbaric Bupivacaine in terms of block characteristics in patients undergoing lower limb surgeries.

MATERIALS AND METHODS

This study was performed in the department of Anesthesiology & ICU in Jawaharlal Nehru Medical College & Hospital, Bhagalpur after obtaining informed consent from all patients. Eighty (80) ASA Gd- I & -II patients scheduled for lower limb surgeries were selected for this study. The study population was randomly divided into two groups, Gp B (saline group) & Gp D (Dexmedetomidine group), forty (n=40) in each.

Pre Anesthetic Preparation:

NPO protocol was followed, 18 G i.v cannula inserted and fluid (Ringer lactate) supplemented to fulfil the loss. Vitals were recorded at PAC, before intrathecal injection and every 5 minutes thereafter till the completion of surgery. Drugs used were Bupivacaine (0.5%) heavy 2.5 ml(12.5mg) with normal saline (0.5 ml) in Gp (B) and with Dexmedetomidine 0.5 ml(5 µg) in Gp(D). Under all aseptic precautions in sitting position, lumbar puncture was performed in L3 -L4 subarachnoid space and free flow of CSF observed. The intended drug combination was injected intrathecally. Immediately after the

injection of the drug, the patient was turned supine and administered oxygen at the rate of 4 lts/min via nasal prong. Sensory and motor block characteristics along with postoperative analgesic duration were monitored . Side effects / complications if any, were noted and dealt accordingly. The data obtained were statistically analysed, inferred, discussed, summarised and concluded.

OBSERVATIONS

Observations are tabled as below :- **Table-1**

Table-1 Comparison Of Block Characteristics Between Group B And Group D

	Group B	Group D	P Value
Mean time taken for onset of sensory block (in mins)	2.9±0.810	1.25±0.563	P<0.001
Mean time taken for onset of motor block (in mins)	4±0.784	1.25±0.371	P<0.001
Mean time taken for regression of sensory block by two segments (in mins)	77.92±9.44	147.9±6.36	P<0.001
Mean time taken for wearing off of motor block (in mins)	164.19±25.78	290.12±18.86	P<0.001
Time of first dose of post operative rescue analgesia (in mins)	190.95±22.98	360.25±37.86	P<0.001

DISCUSSION

The lesser time taken in onset of sensory and motor block in Dexmedetomidine group (D) in our study concurs with the studies done by Arunima et al [8] and Gunjan et al [9]. Mean time taken for regression of sensory block by two segment and time for wearing off of motor block was more in Dexmedetomidine group (D) of our study which was in accordance to studies done by Seema et al [10], Jhanbee et al [11], Kanazi et al [12], Omprakash et al [13] etc. Time of first dose of post operative rescue analgesia was found to be greater in Dexmedetomidine group (D) as compared to bupivacaine group (B) which concurs with the studies done by Rampal et al [14], Dipti et al [15] etc.

SUMMARY

We compared intrathecal Bupivacaine+ Dexmedetomidine (5 µg) with Bupivacaine + normal saline in equal volume of 3 ml in 40 (n=40) cases each. We found that the addition of Dexmedetomidine to Bupivacaine significantly fastens sensory and motor block onset, prolongs duration of sensory and motor block and increases duration of request for 1st postoperative rescue analgesia.

CONCLUSION

From the present study, we recommend the use of Dexmedetomidine (5 µg) with intrathecal Bupivacaine as its addition produces better block characteristics.

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