ABSTRACT

Introduction: Many studies are there using adjuvants such as Neostigmine, clonidine and opioids with bupivacaine in subarachnoid block for comparing efficacy and block characteristics. However, literature is divided regarding efficacy of these intrathecal adjuvants. Furthermore, these adjuvants have their own side effects. Hence, search for better adjuvant to bupivacaine goes on.

Aim: The aim of the present study was to evaluate the effect of intrathecal clonidine as adjuvant to bupivacaine in the subarachnoid block for lower limb surgeries.

Materials and Methods: It was a double blinded randomized controlled study in which sixty patients posted for lower limb surgeries were divided into two groups of thirty each. Group C – Received intrathecal hyperbaric bupivacaine (2.5 ml) +75 μg clonidine (0.5 ml). Group S – Received intrathecal hyperbaric bupivacaine (2.5 ml) +0.5 ml normal saline. Sensory and motor block characteristics, duration of postoperative analgesia, hemodynamic alterations and side effects were recorded and analyzed.

Result: Onset of sensory block was achieved earlier and duration of sensory & motor block was significantly prolonged in Group C compared to Group S (P < 0.001). Time for first dose of rescue analgesia was delayed in Group C (342.33 ± 88.12 min) in comparison to Group S (191 ± 22.94 min) which was statistically significant (P < 0.001). There was a fall in mean arterial pressure in clonidine group from 35 min till the end of surgery (p<0.005).

Conclusion: We recommend the use of intrathecal clonidine 75 μg as adjuvant to bupivacaine with a caution to take care of hemodynamic compromise, if any.

KEYWORDS

Analgesia, bupivacaine, clonidine, intrathecal

INTRODUCTION

Spinal anaesthesia has edge over general anaesthesia such as decreased intraoperative blood loss, reduced incidence of deep venous thrombosis, self-controlled airway and less polypharmacy.[1] The prolongation of duration of subarachnoid bupivacaine has been tried by the use of adjuvants like neostigmine, clonidine, dexametomidine and opioids[2,3,4] but with associated side effects. Intrathecal neostigmine used in spinal anaesthesia is associated with nausea and vomiting [2], dexametomidine with bradycardia and hypotension [3] and opioids with pruritus, nausea, vomiting, urinary retention and delayed respiratory depression[4,5]. So questioned by many others. Recently Clonidine an α-2 agonist as adjuvant to intrathecal bupivacaine has been used by many workers like Khezri et al,[6] Bajwa et al,[7] Chhabra et al.[8] and Sharan et al[9] and has been claimed to be a better alternative for prolongation of block, especially analgesia ,but still with evidence of hypotension and bradycardia.[10] So, in this study clonidine has been evaluated as adjuvant to bupivacaine in terms of block characteristics in patients undergoing lower limb surgeries in this locality in double blind randomised controlled technique.

MATERIALS AND METHODS

This study was performed in the Department of Anaesthesiology and Critical Care in Nalanda Medical College & Hospital, Patna during the period June 2017 to June 2019 after obtaining informed consent from all patients. Sixty (60) 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 S (saline group ) & Gp C (clonidine group), thirty (n=30) in each.

Pre anesthetic preparation:

NPO protocol was followed, 18 G i.v cannula inserted and fluid (Ringer lactate) supplemented to fulfill 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 (12.5) with normal saline (0.5 ml) in Gp (S) and with clonidine 0.5 ml (75 µg) in Gp (C). 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 analgesia was monitored. Side effects / complications if any were noted and dealt accordingly. The data obtained were statistically analysed, inferred, discussed, summarised and concluded.

OBSERVATION

Observations are tabulated below:- Table-1

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Onset of sensory block (mins)</th>
<th>Maximum sensory block (mins)</th>
<th>Regression of sensory block by two segment (mins)</th>
<th>Duration of motor block (mins)</th>
<th>Time of 1st dose of post operative rescue analgesia (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>2.82 ± 0.664</td>
<td>7.4 ± 1.101</td>
<td>79.46 ± 10.16</td>
<td>166.16 ± 20.94</td>
<td>191 ± 22.94</td>
</tr>
<tr>
<td>C</td>
<td>1.41±0.50</td>
<td>5.9 ± 0.802</td>
<td>342.33 ± 88.12</td>
<td>279 ± 24.68</td>
<td>342.33 ± 88.12</td>
</tr>
</tbody>
</table>

Both groups were comparable with respect to their demographic profile, baseline hemodynamic parameters and duration of surgery. Onset of sensory block was achieved earlier in group C (1.41±0.50 min) than group S (2.82 ± 0.664 min). Regression of sensory block by two segment was delayed to 136.33±10.90 min in group C as compared to 79.46±10.16 min for group S ,which was highly significant (p<0.0001). Duration of motor block in group C was 279 ± 24.68 min and in group S was 166.16 ± 20.94 min; (p<0.0001). Time for first dose of rescue analgesic was delayed in Group C (342.33 ± 88.12) compared to Group S (191 ± 22.94 min) which was statistically significant (P < 0.001). The mean arterial pressure showed a statistically significant lower mean arterial pressure in the clonidine group from 35 minutes after drug administration till the end of surgery. (P<0.005 from 35 min to end of surgery).

DISCUSSION

Clonidine is a selective partial agonist for α-2 adrenoreceptors producing hyperpolarisation of nerve fibres. It is known to increase both sensory and motor block of local anaesthetics[11]. The analgesic
SUMMARY

We compared intrathecal bupivacaine + clonidine (75 µg) with bupivacaine+ normal saline in equal volume of 3 ml in thirty (n=30) cases each. We found that clonidine addition to intrathecal bupivacaine significantly fastens sensory block onset, prolongs duration of sensory and motor blockade, increases duration of request for 1st postoperative rescue analgesic dose and hemodynamic disturbances were insignificant up to 30 minutes post injection time, significant fall in clonidine group thereafter.

CONCLUSION

From this study, we recommend use of clonidine (75 µg) with bupivacaine heavy (12.5 mg) with a caution to take care of hemodynamic compromise, if any.

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Conflicts of interest-There are no conflicts of interest.

REFERENCES