Effect of Oral and Intravenous Clonidine as an Adjunct during Spinal Anesthesia

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Drugs like epinephrine and fentanyl prolong bupivacaine subarachnoid block (SAB) and analgesia but have their own limitations.⁴,⁵

The aim of the study was to compare motor block provided by equianalgesic concentrations of oral and intravenous (IV) clonidine in spinal anesthesia in lower abdominal and lower limb surgeries.

INTRODUCTION

Pain is as old as mankind and may be even older. There are ample reasons to believe that it is inherent to life and so the looking for the methods of pain relief. Many techniques and drug regimen with partial or greater success have been tried from time to time by the mankind for the relief of pain.¹

A extension of this analgesia into the post-operative period is an advantage as the need for analgesics is minimized.²,³

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An imidazole was synthesized in early 1960’s. Acts as an antihypertensive by virtue of its ability to decrease sympathetic nervous system output from the central nervous system.

Intrathecal clonidine when used as adjunct potentiates the effect of local anesthetics and allows a decrease in required doses.⁶ A non-opioid α₂ agonist is administered sublingually, intramuscularly, IV and various other routes. It prolongs the duration of motor and sensory spinal

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blockade when used along with local anaesthetics. It also acts as a sedative and reduces post-operative shivering.

The dose of oral and IV clonidine is same because the bioavailability of the routes remains the same which is 3.5 mcg/kg.

**MATERIALS AND METHODS**

A prospective, randomized, comparative study was carried out on 60 patients of 18-60 years of age posted for elective lower abdominal and lower limb surgeries in spinal anesthesia. Detailed pre-anesthetic checkup was done on all patients and relevant hematological, biochemical and radiological investigations was done for all patients as per surgical requirements. Patients selected for the study was randomized into 3 groups of 20 patients each.

- Group B: 0.5% bupivacaine heavy 15 mg/kg.
- Group OC: 0.5% bupivacaine heavy 15 mg + oral clonidine 3 mcg/kg.
- Group IC: 0.5% bupivacaine heavy 15 mg + IV clonidine 3 mcg/kg.

Pre-anesthetic checkup of all the patients will be done 1 day prior to the surgery. All the routine hematological and biochemical investigations were done. With the patient in the sitting position, SAB was performed at the level of L3-L4 space through midline approach using a 25G Quincke spinal needle. Thereafter, heart rate (HR), mean arterial pressure and O2 saturation were recorded every 5 min until surgery. The sensory block was assessed using loss of sensation to pinprick. The motor block was assessed using a modified bromage scale. Sedation was assessed using a Ramsay sedation scale and visual analog scale score was recorded during the 1st h of surgery.

**RESULTS**

Table 1 shows age distribution of the patients of three groups.

Table 2 shows weight wise distribution of patients.

Table 3 Comparing variables sensory onset, sensory duration, motor onset, motor duration, sedation score, time of the 1st post-operative analgesia, total analgesic required post-operative (24 h).
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Table 3: Comparing variables sensory onset, sensory duration, motor onset, motor duration, sedation score, time of the 1st post-operative analgesia, total analgesic required post-operative (24 h)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean±SD</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Group B</td>
<td>Group OC</td>
</tr>
<tr>
<td>Sensory onset (min)</td>
<td>5.35±0.67</td>
<td>5.3±0.73</td>
</tr>
<tr>
<td>Sensory duration (min)</td>
<td>163.5±6.71</td>
<td>165.25±7.16</td>
</tr>
<tr>
<td>Motor onset</td>
<td>7.4±0.75</td>
<td>7.25±0.79</td>
</tr>
<tr>
<td>Motor duration</td>
<td>136.5±5.87</td>
<td>140.34±22.68</td>
</tr>
<tr>
<td>Sedation score</td>
<td>2.85±0.88</td>
<td>1.9±0.72</td>
</tr>
<tr>
<td>Time of 1st post op analgesia</td>
<td>1.05±0.76</td>
<td>1.4±0.68</td>
</tr>
<tr>
<td>Total analgesic required post-operative (24 h)</td>
<td>1.1±0.64</td>
<td>0.7±0.57</td>
</tr>
</tbody>
</table>

SD: Standard deviation

(oral clonidine) 165.25 ± 7.16 min and in Group III (IV clonidine) 175.75 ± 7.48 min. The time of sensory regression was longest in Group III (IV) as compared to control and oral group.

In our study, time of motor block onset to Bromage 0 in Group I (control group) was 136.5 ± 5.87 min, in Group II (oral clonidine) 140.34 ± 22.68 min and in Group III (IV clonidine) 148.75 ± 22.7 min. The time of motor regression was longest in Group III (IV) as companied to control and oral group.

Hemodynamic Changes

In our study, there was a statistically significant fall in HR in group oral clonidine group compared to group bupivacaine and IV clonidine ($P < 0.05$).

There was a significant fall in the systolic blood pressure in all three groups with maximum fall in Group IV clonidine, but it was not statistically significant ($P > 0.05$).

There was a significant fall in the diastolic blood pressure in all three groups with maximum fall in Group IV clonidine, but it was not statistically significant ($P > 0.05$).

Oxygen saturation was similar in all three groups.

The sedation score in Group B (bupivacaine) was 1.3 ± 0.47, (oral clonidine) OC was 1.9 ± 0.72, Group IC (IV clonidine) was 2.85 ± 0.88.

In our study, duration of analgesia in Group I (control group) was 1.05 ± 0.76 h, in group II (oral clonidine) was 1.40 ± 0.68 h and in Group III (IV clonidine) was 2.10 ± 0.55 h. The analgesia was the longest in Group IC (IV) as compared to oral and placebo groups.

In our study, total analgesic required in 1st 24 h in Group I (control group) was 1.10 ± 0.64 in Group II (oral clonidine) was 0.70 ± 0.57 and in group III (IV clonidine) was 0.45 ± 0.60. Thus, the requirement of analgesic was least in IV clonidine group.

CONCLUSION

Hence, it can be concluded that IV clonidine is a more effective than oral clonidine with less incidence of side effects.

REFERENCES


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