Analgesic effect of clonidine added to bupivacaine in saphenous/sciatic nerve blocks for elective foot surgery in children

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Abstract

INTRODUCTION: The aim of this study was to evaluate the effect of clonidine added to bupivacaine in saphenous / sciatic nerve blocks for foot surgery in children.

PATIENTS AND METHODS: After ethics committee approval and parental informed consent, we conducted a prospective, randomized, double-blinded study including children aged between 1 and 10 years, scheduled for unilateral elective foot surgery. Sevoflurane was used for induction and maintenance of anesthesia, associated to a saphenous/vastus medialis and sciatic (popliteal approach) nerve blocks. These blocks were performed after randomization using bupivacaine 0.25% (respectively 0.2 and 0.3 ml/kg) plus 1 ml of a solution containing either clonidine 1µg·kg⁻¹ (G1) or normal saline solution (G2). CHEOPS was noted on the recovery then 1, 2, 3, 4, 6, 9, 12, 18 and 24 hours after surgery. If CHEOPS >7, the child received paracetamol 15 mg·kg⁻¹. Time to first requirement and the total doses of analgesic given were recorded. Heart rate (HR) and mean arterial pressure (MAP) were collected at baseline, after performing nerve blocks, at skin incision, and then every 10 minutes until the end of surgery. In the post-operative period, we also noted Ramsay score and the duration of motor block. Chi-square and Student t-tests were used in statistical analysis; p < 0.05 was considered significant.

RESULTS: Twenty eight children were included (G1:G2=14:14). Demographic data were comparable between the groups. Fourteen patients required supplemental analgesics during the first 24 post operative hours (G1:G2=7:7). p(n=1). Time to first analgesic requirement was comparable between the groups (G1:664±461, G2:527±489 min; p=0.60). CHEOPS was significantly higher in G2 compared to G1 at the 9th post operative hour. There was no significant difference between groups regarding intra operative HR and MAP and post operative Ramsay score. Motor block duration was also similar between groups (p=0.55).

CONCLUSION: Clonidine added to bupivacaine may not improve the quality of analgesia in saphenous / sciatic nerve blocks for foot surgery in children.

Material & Methods:

Study design: Prospective, randomized, double-blinded study.

Inclusion criteria: After ethics committee approval and parental informed consent, we included children aged between 1 and 10 years, scheduled for unilateral elective foot surgery.

Standardized anesthetic technique: Sevoflurane was used for induction and maintenance of anesthesia associated to a saphenous/vastus medialis and sciatic (popliteal approach) nerve blocks.

Randomization: The saphenous/vastus medialis and sciatic nerve blocks were performed using bupivacaine 0.25% (respectively 0.2 and 0.3 ml/kg) plus 1 ml of a solution containing either clonidine 1µg·kg⁻¹ (G1) or normal saline solution (G2).

Post operative period: CHEOPS was noted on the recovery then 1, 2, 3, 4, 6, 9, 12, 18 and 24 hours after surgery. If CHEOPS >7, the child received paracetamol 15 mg·kg⁻¹.

Primary outcome measure: Post operative analgesia assessed by the time to first requirement and the total doses of analgesic given were recorded.

Secondary outcome measures:

- Intra operative analgesia evaluated using Heart rate (HR) and mean arterial pressure (MAP) : collected at baseline, after performing nerve blocks, at skin incision, and then every 10 minutes until the end of surgery.
- Post operative sedation level : Ramsay score
- Duration of motor block.

Statistical analysis:

Chi-square and Student t-tests were used in statistical analysis; p < 0.05 was considered significant.

Results:

Table 1: Patients’ characteristics

<table>
<thead>
<tr>
<th></th>
<th>G1 N=14</th>
<th>G2 N=14</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>4.3±3</td>
<td>4.2±2.7</td>
<td>0.94</td>
</tr>
<tr>
<td>Sex-ratio</td>
<td>1.8</td>
<td>1.33</td>
<td>0.70</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>18±10</td>
<td>17±6</td>
<td>0.68</td>
</tr>
<tr>
<td>Duration of surgery (min)</td>
<td>77±38</td>
<td>85±36</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Conclusion:

Clonidine added to bupivacaine may not improve the quality of analgesia in saphenous / sciatic nerve blocks for foot surgery in children.

References: