**Perioperative use of Gabapentin in Children for Spinal Fusion Surgery**

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**Introduction**

Gabapentinoids have demonstrated beneficial effect in various studies evaluating their result on postoperative pain. Studies indicate that they have opioid sparing effect, reduce opioid related side effects, improve pain scores, and have a favorable effect in preventing the development of chronic pain (1, 2, and 3). The aim of our study was to evaluate perioperative use of gabapentin in managing postoperative pain in children and adolescents following spinal fusion surgery for idiopathic scoliosis.

**Methods**

Following IRB approval, data were collected retrospectively for 133 children who underwent spinal fusion surgery at our institution for correction of idiopathic scoliosis between 2010 and 2012. All children were assigned to one of the two groups:

- **Group I**: Morphine PCA only - 69 patients
- **Group II**: Morphine PCA and gabapentin - 64 patients

Gabapentin (12.5 mg/kg body weight up to 1000 mg maximum) was administered one hour before surgery and then continued postoperatively (100 to 200 mg TID) until day of discharge in group II. Postoperatively, the following parameters were recorded:

- Time to wakeup following surgery (from end of surgery to leaving the operating room)
- Morphine consumption on postop day 0 and day 1
- Pain scores (VAS)
- Opioid-related side effects (nausea, vomiting, pruritis)
- Day of transition to oral pain medications
- Time to start of physical therapy and ambulation
- Length of stay

**Table – showing various parameters measured**

<table>
<thead>
<tr>
<th>Modality</th>
<th>Group I (PCA only) 69 patients</th>
<th>Group II (PCA + Gabapentin) 64 patients</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine Consumption mg/kg/hr</td>
<td>Day 0: 0.050 ± 0.027</td>
<td>0.050 ± 0.016</td>
<td>0.02**</td>
</tr>
<tr>
<td>Wake up time at the end of surgery (min)</td>
<td>Day 1: 0.010 ± 0.013</td>
<td>0.051 ± 0.057</td>
<td>0.69</td>
</tr>
<tr>
<td>Patients transitioned to oral medications on postop day 1</td>
<td>11.86 ± 11.51</td>
<td>17.78 ± 17.78</td>
<td>0.062</td>
</tr>
<tr>
<td>Ambulation (Days)</td>
<td>1.61 ± 0.764</td>
<td>1.46 ± 0.570</td>
<td>0.68</td>
</tr>
<tr>
<td>Nausea &amp; Vomiting Treatment</td>
<td>1.83 ± 1.95</td>
<td>1.53 ± 1.26</td>
<td>0.86</td>
</tr>
<tr>
<td>Pruritis Treatment</td>
<td>0.88 ± 1.69</td>
<td>0.78 ± 1.54</td>
<td>0.716</td>
</tr>
</tbody>
</table>

**Discussion**

Nominal data were analyzed with chi-squared test, and interval data were analyzed using independent sample t-test (IBM. SPSS Statistics, Armonk, NY). Significance was assumed at p<0.05

- Both groups were similar in demographics.
- There was no difference in wake-up times between the groups after completion of surgery (Table).
- Total Morphine consumption was significantly greater in group I on postop day 0 (Group I - 0.050±0.027 mg/kg/hr vs. Group II - 0.041±0.016 mg/kg/hr). We found no difference in morphine consumption on postop day 1.
- Significantly more children could be transitioned to oral pain medications on day 1 in group II (Fig.1).
- There was no significant difference between the two groups in pain scores, incidence or severity of side effects (nausea, vomiting and pruritis), day of ambulation, and the hospital length of stay.

**Conclusion**

- Perioperative gabapentin administration decreases opioid consumption in the postop period only on the day of surgery.
- More patients could be transitioned to oral pain medications on postop day 1.
- No difference in adverse effects could be seen in our pain management during the subsequent hospital stay (3).
- Studies indicate the usefulness of gabapentin in prevention of chronic postsurgical pain, but we are unable to comment on that since our patients were not followed by our institution once they were discharged from the hospital.

**References**