Use of Intranasal Fentanyl in Palliative Care of Newborns and Infants

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Background
Neonatal deaths due to non-survivable congenital anomalies and perinatal conditions are a continued reality of newborn care. The need for a palliative approach can often be anticipated and prepared for when there is a prenatal diagnosis of a life-limiting fetal condition. Palliative care may also be appropriate when addressing the goals of care for seriously compromised neonates. Fentanyl is a lipophilic, highly potent opioid that is readily absorbed through the mucous membranes and the blood brain barrier. It is not irritating to the mucosa1,2. The T1/2 of fentanyl is 3.5-15 minutes with therapeutic levels reported in as short as 2 minutes5. The onset of effect is within 5 minutes1. The bioavailability of fentanyl has been found to be 71-89%1. 

There is a need to expand the pediatric and adult literature on intranasal use of the injectable preparation for the management of pain and dyspnea in newborns and infants at end- of-life.

Purpose
The purpose of this research was to evaluate the use, effectiveness, and safety of intranasal and buccal transmucosal fentanyl administration in newborns and infants 6 months of age or less.

Methods / Data Collection

A retrospective chart review with data collected from November 2006 through July 2010.

Results
A total of 58 charts were reviewed. Intranasal fentanyl was administered to 13 patients at end-of-life. This poster describes the two distinct patient groups in which fentanyl was administered – newborns and infants.

Information on Fentanyl Usage

<table>
<thead>
<tr>
<th>ID</th>
<th>Age at Death</th>
<th>Main Diagnosis</th>
<th>Gestational Age at Birth</th>
<th>Dose of Intranasal Fentanyl (mcg/kg)</th>
<th>Information on Intranasal Fentanyl Use</th>
<th>Documentation on Effectiveness of Intranasal Fentanyl</th>
<th>Other Medications Ordered for Symptom Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7 days</td>
<td>Anencephaly</td>
<td>28 weeks</td>
<td>2.5 mg/kg</td>
<td>No charting about effectiveness of fentanyl.</td>
<td>No other medications ordered for symptom management.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>12 hrs</td>
<td>Trisomy 18 with cardiac defect</td>
<td>41 weeks</td>
<td>15 mcg/kg</td>
<td>Used 8 doses of 3 mcg/kg at 0 min, 4 min, 8 min, 12 min, 16 min, 20 min, 24 min, 28 min, a dose every 5 min, with the last dose given 7 min prior to death.</td>
<td>No charting about effectiveness of fentanyl.</td>
<td>No other medications ordered for symptom management.</td>
</tr>
<tr>
<td>3</td>
<td>15 hrs</td>
<td>Trisomy 18 with cardiac defect</td>
<td>33 weeks</td>
<td>1 mcg/kg</td>
<td>Used 8 doses of 3 mcg/kg at 0 min, 4 min, 8 min, 12 min, 16 min, 20 min, 24 min, 28 min, a dose every 5 min, with the last dose given 7 min prior to death.</td>
<td>No charting about effectiveness of fentanyl.</td>
<td>No other medications ordered for symptom management.</td>
</tr>
<tr>
<td>4</td>
<td>20 hrs</td>
<td>Pulmonary atresia, d-transposition of aortic arch</td>
<td>32 weeks</td>
<td>1 mcg/kg</td>
<td>Used 7 doses of 3 mcg/kg at 0 min, 4 min, 8 min, 12 min, 16 min, 20 min, 24 min, 28 min, a dose every 5 min, with the last dose given 7 min prior to death.</td>
<td>No charting about effectiveness of fentanyl.</td>
<td>No other medications ordered for symptom management.</td>
</tr>
<tr>
<td>5</td>
<td>23 hrs</td>
<td>Pulmonary atresia, d-transposition of aortic arch</td>
<td>30 weeks</td>
<td>0.5 mcg/kg</td>
<td>Used 8 doses of 0.5 mcg/kg at 0 min, 15 min, 30 min, 45 min, 60 min, 75 min, 90 min, 105 min, 120 min.</td>
<td>No charting about effectiveness of fentanyl.</td>
<td>No other medications ordered for symptom management.</td>
</tr>
</tbody>
</table>

Discussion / Conclusions

• Administration of intranasal fentanyl to newborns and infants at end-of-life is safe and effective in managing respiratory distress
• Intranasal fentanyl is useful in a variety of care settings (hospital and home) for the management of symptoms in newborns and infants at end-of-life
• Identified the need to address logistical issues, which include: development of a guideline for the availability of the medication; the use of an atomizer in nasal medication delivery; and supporting staff in this approach to managing symptoms in newborns and infants at end-of-life.

References