LOWER CERVICAL/UPPER THORACIC HEMILAMINECTOMY FOR INTRATHecal CATHETER PLACEMENT IN TREATMENT OF CHILDHOOD DYSTONIA

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Background

- Intrathecal baclofen (ITB) has become an indispensable tool in the management of medically-refractory childhood spasticity
- Typically, intrathecal space accessed via lumbar route
- More recent studies have reported use in refractory secondary dystonia
- In generalized dystonia, baclofen acts at level of cerebral convexities to inhibit stimulation of the premotor and supplementary motor cortex
Secondary Dystonia

- requires higher doses of ITB for optimal management
- approximately 50% pts with GMFS IV-V develop scoliosis by teenage years
- poor response to bolus injection trials
- multiday catheter trials provide more accurate picture of baclofen response
Series

- 12 patients (4-18 yrs) underwent catheter trials
- 5/12 had hemilaminectomy above level of spine fusion
- 7/12 lumbar subarachnoid space accessed and catheter advanced to mid-cervical via fluoroscopy
- Dystonia trials: 3-4 days
- Initial dose 4mcg/hr (96mcg/d) 18mcg/hr (432mcg/d)
- Most common cause: cerebral palsy, hypoxic-ischemic brain injury
Movement Type

Frequency

- Spastic: 3
- Dystonia: 5
- Spastic-Dystonia: 2
- Choroathetoid: 2
Outcome Measures

- Dystonia/Spasticity
- Positioning/care/hygiene
- Pain
- Decreased medications
## Barry-Albright Dystonia Score

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>absent</td>
<td>No dystonia</td>
</tr>
<tr>
<td>1:</td>
<td>slight</td>
<td>&lt;10%; no interference with lying, sitting, walking</td>
</tr>
<tr>
<td>2:</td>
<td>mild</td>
<td>&lt;50%; no interference with lying, sitting, walking</td>
</tr>
<tr>
<td>3:</td>
<td>moderate</td>
<td>&gt;50%; interference with lying, sitting, walking</td>
</tr>
<tr>
<td>4:</td>
<td>severe</td>
<td>&gt;50%; prevents sitting in wc, standing, walking</td>
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</tbody>
</table>
Ashworth Spasticity Scale

0 • No increase in muscle tone

1 • Slight increase in tone (catch and release)

2 • More marked increase in tone through most of range of motion

3 • Considerable tone, passive movement difficult

4 • Affected extremities rigid in flexion/extension
Results

- All patients demonstrated improvement in Ashworth spasticity scores and Barry-Albright dystonia scores
- 1 CSF leak
- No other catheter complications
- No infections
- f/u 16-26 mos (2011-2012)
Pre and Post-Trial Ashworth Scores

<table>
<thead>
<tr>
<th>Extremity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUE</td>
<td>2.3</td>
<td>1.5</td>
</tr>
<tr>
<td>LUE</td>
<td>2.0</td>
<td>1.3</td>
</tr>
<tr>
<td>RLE</td>
<td>2.5</td>
<td>1.7</td>
</tr>
<tr>
<td>LLE</td>
<td>2.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Average</td>
<td>2.0</td>
<td>1.5</td>
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</table>
Pre and Post-Trial BAD Scores

<table>
<thead>
<tr>
<th>Trial Period</th>
<th>Score</th>
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<tbody>
<tr>
<td>Pre</td>
<td>23.08</td>
</tr>
<tr>
<td>Post</td>
<td>16.17</td>
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</tbody>
</table>
Conclusion

- Hemilaminectomy provides convenient, effective means of catheter placement in children s/p fusion or with other obstacles for catheter placement (i.e., arachnoiditis)

- Catheter used for dystonia trial can be safely maintained at time of pump implantation

- Higher catheter entry appears to provide a more generalized effect in dystonic patients

- Intraventricular placement of catheter may be a safe, and possibly more effective alternative