Pallidal deep brain stimulation (DBS) is a viable treatment for individuals with many forms of progressive dystonia. The FDA granted a humanitarian device exemption (HDE) for use in patients with dystonia in 2003.

In cerebral palsy, two large series (> 10 patients) have been published. One in adults with athetoid-dystonic CP and one in children and young adults with mixed CP. 4 We also participated in a meta-analysis review that was completed 2012. 5

We present our expanded experience using pallidal stimulation for individuals with many forms of progressive dystonia. The FDA Pallidal deep brain stimulation (DBS) is a viable treatment for cerebral palsy: a meta-analysis. Mov Disord 2011;26(9):1748-1758.

Statistical Analysis

- ANCOVA of change scores with baseline as covariate

Results

Baseline Differences

<table>
<thead>
<tr>
<th></th>
<th>≤15 yrs</th>
<th>&gt;15 yrs</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>BFMDSRS Motor</td>
<td>66.33 (SD = 29.73)</td>
<td>87.18 (SD = 16.54)</td>
<td>f≤15 vs &gt;15 = 8.86, p = .006</td>
</tr>
<tr>
<td>BFMDSRS Motor Upper Extremities</td>
<td>19.79 (SD = 7.27)</td>
<td>27.74 (SD = 4.00)</td>
<td>f≤15 vs &gt;15 = 11.06, p = .002</td>
</tr>
<tr>
<td>BFMDSRS Disability</td>
<td>20.58 (SD = 6.51)</td>
<td>25.05 (SD = 3.55)</td>
<td>f≤15 vs &gt;15 = 4.55, p = .042</td>
</tr>
<tr>
<td>BAS</td>
<td>22.42 (SD = 14.21)</td>
<td>25.36 (SD = 3.15)</td>
<td>f≤15 vs &gt;15 = 3.92, p = .058</td>
</tr>
</tbody>
</table>

Notes. Range in parentheses.

Discussion & Conclusions

Pallidal deep brain stimulation offers an effective option for the amelioration of severe motor dysfunction in individuals with dystonia due to cerebral palsy. Improvement is often seen by 6 months, and maintained even after two or more years of stimulation. Children implanted prior to age 16 years experience greater reduction in motor impairment than those implanted later in life.

Corresponding reduction in disability is also seen.

Although improvements may be seen in adolescents and young adults, patients done prior to age 16 years (skeletal maturity) seem to benefit more than those done later in life.

Although we have demonstrated that some children with dystonia related to CP will improve with DBS, our experience leaves many more question to be answered:

- How to determine which patients are most likely to benefit?
- How to more accurately measure the degree of impairment?
- How to separate the effects of spasticity and dystonia?
- Are we programming correctly? Are we programming optimally?

References

4. www.cookchildrens.org/neuro