Comparison of Early Diagnosis of Cerebral Palsy in the High-Risk Neonatal Population

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BACKGROUND

The method for diagnosis of cerebral palsy (CP) in pediatric development clinics at the University of Wisconsin has evolved over the past decade. A systematic review published by Novak et al. in 2017 identified several objective measures as part of a new pathway for early and accurate diagnosis of cerebral palsy in infants. Prior research has highlighted the importance of early intervention for improved prognosis with early diagnosis a key. This study reviews the utilization of objective measures and implementation of these new guidelines for early diagnosis of cerebral palsy by developmental pediatricians with the hypothesis that patients would be diagnosed earlier for those evaluated in 2018 or later.

RESULTS

Fourty-six out of 346 patients met inclusion criteria. Median age of first CP mention was 9 mo (1.0-5.0) in the first group (1/1/10-12/21/17) and 10 mo (2.0-34.0) in the second group (1/1/18-12/31/20) (p=1.0). Median GMFCS was 2 (1.0-5.0) in the first group and 1 (1.0-3.0) in the second group (p=0.0496). Five patients in the second group did not have a GMFCS recorded secondary to age less than 2 yr. Median time from initial presentation to first mention was 5 months (0.0-23.0) in the first group and 0.0 (0.0-33.0) in the second group (p=0.7592). Median time from first mention to diagnosis was 0 months (0.0-25.0) in the first group and 4 months (0.0-20.0) in the second group (p=0.2974). Objective measures were used for diagnosis in 36% of patients in the first group compared to 92% of patients in the second.

Table 1. Median age at first mention of CP, time from presentation to first mention, and time from first mention to diagnosis between patients diagnosed 2010-2017 and 2018-2020.

<table>
<thead>
<tr>
<th>Group</th>
<th>Adjusted Age at First CP Mention, Median (Range)</th>
<th>Time from Presentation to First Mention, Median (Range)</th>
<th>Time from First Mention to Diagnosis, Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2017 (n=33)</td>
<td>9.0 (3.0-10.0)</td>
<td>5.0 (0.0-23.0)</td>
<td>0.0 (0.0-25.0)</td>
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<tr>
<td>2018-2020 (n=13)</td>
<td>10.0 (2.0-14.0)</td>
<td>0.0 (0.0-33.0)</td>
<td>4.0 (0.0-20.0)</td>
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Figure 1. Percent of patients in each GMFCS category

Figure 2. Motor function compared to age at first mention

CONCLUSIONS

While the average age of first mention of cerebral palsy was similar between groups, children had significantly lower GMFCS levels in the latter group correlating with more mild motor symptoms and were diagnosed on a similar timeline to those with more severe CP. Evidence-based objective measures were used for diagnosis consistently in the second group resulting in earlier initiation of targeted therapies due to concerns found on these tests. Whether the GMFCS scores were lower due to earlier therapies, improved neonatal care, or other factors is unknown. It remains clear that the use of objective tests encourages early and aggressive intervention.

REFERENCES