A shift in retinopathy of prematurity diagnosis at treatment: A 10-year retrospective review

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Introduction
The severity of retinopathy of prematurity (ROP) for which treatment is recommended is well defined by the results of the Early Treatment of ROP trial (1).

This study evaluates whether there has been a change over the past decade in the characteristics of ROP (stage, zone, and plus disease) at the time of treatment.

Methods
STUDY DESIGN: Retrospective cohort study
SETTING: Children's Hospital of Philadelphia January 2005 to December 2014
INCLUSION CRITERIA: Infants who underwent laser treatment for ROP at the Children’s Hospital of Philadelphia between Jan 2005 and Dec 2014, who had complete data
ANALYSIS: We compared the characteristics of ROP diagnosis at the time of treatment for two different time periods

- Over the 10-year period, 189 patients were treated for ROP at our institution.
- 24 were excluded due to incomplete data
- 165 had complete data for final analysis
  - 98 in 2005 - 2009 time period
  - 67 in 2010 - 2014 time period
- There was no statistically significant difference between the two groups in
  - mean birth weight (713g vs. 721g, p=0.83)
  - mean gestational age (25.3 vs. 25.1 weeks, p=0.48).
- The mean post-menstrual age at treatment was less in the 2010 - 2014 time period (36.5 vs. 37.5 weeks, p=0.04).
- Significantly more infants with zone I disease and less severe plus were treated in the 2010 - 2014 time period (Table 1).

Results

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>Treated 2005 - 2009</th>
<th>Treated 2010 - 2015</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5 (3%)</td>
<td>4 (4%)</td>
<td>1 (1%)</td>
<td>0.34</td>
</tr>
<tr>
<td>3</td>
<td>160 (97%)</td>
<td>94 (96%)</td>
<td>66 (99%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>44 (27%)</td>
<td>14 (14%)</td>
<td>30 (45%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2</td>
<td>121 (73%)</td>
<td>84 (86%)</td>
<td>37 (55%)</td>
<td></td>
</tr>
<tr>
<td>Plus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>7 (4%)</td>
<td>2 (2%)</td>
<td>5 (8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pre Plus</td>
<td>18 (11%)</td>
<td>3 (3%)</td>
<td>15 (23%)</td>
<td></td>
</tr>
<tr>
<td>Plus</td>
<td>139 (85%)</td>
<td>93 (95%)</td>
<td>46 (70%)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: RetCam image of Type 1 ROP, stage 3 zone I, with plus disease, taken during 2010 - 2014 time period at CHOP

Table 1: ROP Characteristics in the Worse Eye at the Time of Treatment with Type 1 ROP

Conclusion
- Significantly more babies with zone I disease were treated in the 2010 - 2014 time period.
- Since stage 3 zone I ROP meets treatment criteria without the presence of plus disease, it follows that a lower rate of plus was noted during the latter 2010 - 2014 time period.

Discussion
- Our hypothesis to explain the shift in ROP diagnosis at treatment between the time periods was the increased availability of bedside RetCam imaging from the 2010 - 2014 time period. We suspect this allowed for more accurate zoning of ROP.

Reference