Tunica Vasculosa Lentis as an Independent Risk Factor for Treatment in Retinopathy of Prematurity

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Relevant Financial Disclosures

🔹 None
Outline

- Background
- Purpose
- Methods
- Results
- Considerations
Background

- Tunica vasculosa lentis (TVL) is a vascular network that aids in development of the lens
- TVL can be identifiable on neonatal screening examination
- TVL growth and regression is VEGF dependent
- There is limited data correlating TVL with ROP outcomes
Purpose

To assess whether persistent tunica vasculosa lentis (TVL) on neonatal screening examination affects the rate of treatment required in retinopathy of prematurity (ROP).
Methods

- Single ROP screener 2009-2019
- Those with TVL matched 1:1 on birth weight and gestational age at birth
- Outcomes included rate of treatment with laser or intravitreal bevacizumab, plus disease, zone 1, and stage 2 or 3 ROP
- Paired t-test, Chi square analysis and McNemar’s test were used in the analysis
Matching Algorithm

- Start with Gestational Age (Day).
  - If yes, proceed to Birth Weight (+/- 10%).
  - If no, go to Gestational Age (+/- 1 day).
    - If yes, go to Birth Weight (+/- 10%).
    - If no, match.
- If Birth Weight (+/- 10%) is yes, match.
- If Birth Weight (+/- 10%) is no, match.

Flowchart:

1. Gestational Age (Day) → Birth Weight (+/- 10%)
2. No → Gestational Age (+/- 1 day) → Birth Weight (+/- 10%)
3. No → Match
4. Yes → Match
Representative Photos
### Results

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Tunica Cases</th>
<th>Matched Cases</th>
<th>P -Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>94</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Average Birth Weight (Grams)</td>
<td>715.70</td>
<td>716.02</td>
<td>0.95</td>
</tr>
<tr>
<td>Average Birth Gestational Age (weeks)</td>
<td>25.72</td>
<td>25.71</td>
<td>0.560</td>
</tr>
<tr>
<td>Multiparity</td>
<td>15</td>
<td>13</td>
<td>0.83</td>
</tr>
<tr>
<td>TVL at First Visit</td>
<td>76 (80.85%)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
## Results

### Table 2. Outcomes

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Tunica Cases</th>
<th>Matched Cases</th>
<th>P -Value</th>
<th>Odds Ratio</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Treated(^2)</td>
<td>29 (30.85%)</td>
<td>10 (10.64%)</td>
<td>&lt;0.001</td>
<td>4.80</td>
<td>1.8-16.1</td>
</tr>
<tr>
<td>Bevacizumab Intravitreal</td>
<td>26 (27.66%)</td>
<td>6 (6.38%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laser</td>
<td>8 (8.51%)</td>
<td>4 (4.26%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retreatment(^3)</td>
<td>5 (5.32%)</td>
<td>0</td>
<td>0.302</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post Conception Age at Treatment(^1)</th>
<th>36.39</th>
<th>37.90</th>
<th>0.225</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Plus Disease(^2)</th>
<th>25 (26.60%)</th>
<th>16 (17.02%)</th>
<th>0.136</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ROP(^2)</th>
<th>76 (80.85%)</th>
<th>69 (73.40%)</th>
<th>0.119</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1</td>
<td>15 (15.96%)</td>
<td>2 (2.12%)</td>
<td>0.002</td>
</tr>
<tr>
<td>Stage 2 or 3</td>
<td>59 (62.77%)</td>
<td>53 (56.38%)</td>
<td>0.239</td>
</tr>
</tbody>
</table>
In the TVL group 24% were noted to have a hazy view.
Regression Analysis

- The positive correlation between the presence of TVL and rate of treatment in ROP was demonstrated in logistic regression including independent factors:
  - Birth weight
  - Gestation age
  - Plus disease
  - Multipartiy
Conclusions and Significance

- Largest study to date on the subject of TVL and ROP outcomes
- Those with TVL on ROP screening have a worse prognosis with higher rates of treatment requirement and zone 1 disease when compared to age and birthweight matched controls
- More frequent examinations could be considered in those with persistent TVL on initial screening
- TVL may play a role in remote ROP screening and could warrant referral to a specialist
- TVL could be a consideration in AI or mixed ROP prediction algorithms
Thank You

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