LONG TERM DEVELOPMENTAL OUTCOMES OF 30 INFANTS WITH HYPOXIC ISCHEMIC ENCEPHALOPATHY WHO RECEIVED HYPOTHERMIA AT GEORGE PROVINCIAL HOSPITAL, SOUTH AFRICA

Researchers: Desireé van der Vyver and Suzanne Stark
Co-researcher: Pamela Gretschel (University of Cape Town)
Ethical clearance: UCT, HREC REF 261/2012
HIE: Introduction and background

• Definition: HIE is an acquired syndrome of acute brain injury.¹
• Incidence: 3-5 per 1000 live births in developed countries.²
• Scoring:

<table>
<thead>
<tr>
<th>Modified Sarnat</th>
<th>Score</th>
<th>Development outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild HIE</td>
<td>1-10</td>
<td>Normal outcome</td>
</tr>
<tr>
<td>Moderate HIE</td>
<td>11-15</td>
<td>Unpredictable outcome</td>
</tr>
<tr>
<td>Severe HIE</td>
<td>16-22</td>
<td>Grave outcome (death or disability)</td>
</tr>
</tbody>
</table>

• What is Hypothermia?

• George Provincial Hospital: selective head cooling

• Rational for the study

• Quantitative study

• Tools:
  • Developmental data:
    – Strive Towards Achieving Results Together (START)
    – Early Childhood Developmental Criteria (ECDC)
    – Gross Motor Function Measure (GMFM-88)
  • Parent questionnaire
  • Summary data

• Statistical analysis: Fischer’s exact test
Preliminary results: Development and Cerebral Palsy

Overall Development
N=30
- Normal Development
- Cerebral Palsy
- Lost to follow up

Cerebral Palsy N = 8

<table>
<thead>
<tr>
<th>CP</th>
<th>Sarnat HIE Score</th>
<th>GMFCS – E&amp;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Severe</td>
<td>Level 5</td>
</tr>
<tr>
<td>1</td>
<td>Moderate</td>
<td>Level 1</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Level 5</td>
</tr>
</tbody>
</table>
Preliminary results: START and ECDC

START
36 months N = 16

- ADL
- Communication
- Gross motor skills
- Fine motor skills

ECDC
4 years N = 14
5 years N = 11

- Gross motor skills
- Cognitive index and Fine motor skills
Preliminary results: Summary and Social Data

• Social Data:
  • Age of the mother N = 30
  • Family income N = 27

• Summary Data:

<table>
<thead>
<tr>
<th>Significant</th>
<th>Not Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIE score</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>Apgar score at 5 minutes</td>
</tr>
<tr>
<td></td>
<td>Apgar score at 10 minutes</td>
</tr>
<tr>
<td></td>
<td>HIV exposed</td>
</tr>
</tbody>
</table>

Correlation:

<table>
<thead>
<tr>
<th></th>
<th>Normal development</th>
<th>CP</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe HIE score</td>
<td>1</td>
<td>6</td>
<td>0.008</td>
</tr>
</tbody>
</table>

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• Severe HIE score correlate with Cerebral Palsy
• What matters is HIE score not HIE exposure
• Development: Mild HIE score vs socio-economic status
• Brick vs informal housing: lost to follow up
• Gross and fine motor skills: South Africa vs UK studies
• SA landscape of Early Childhood Services (0-5yrs)
• Access to standardised tools

Thanks to parents, children & George Provincial Hospital staff