Delivery room management and outcome around the limits of viability

Martens T., Laroche S., Jacquemyn Y., Van Laere D.

Aanbeveling perinatale zorgen rond levensvatbaarheid in Vlaanderen (2014)

- <24 0/7wk: geen intensieve zorgen tenzij …
- 24 0/7 tem 26 0/7 wk geïndividualiseerd beleid na counselling
- vanaf 26 0/7 wk: actief neonataal beleid tenzij …
Aims

-develop our own counseling tool for ELGANs
-reflect on our perinatal care

* antenatal steroids
* MgSO4
* delayed cord clamping
* less invasive surfactant administration
* less invasive respiratory support
Methods

- single center retrospective cohort study from 2002-2012

- GA 23-26 6/7 weeks

- data retrieved from:
  - maternal medical record
  - neonatal medical record
  - follow-up record

Patients

n= 252: GA 23 – 26 6/7, 2002-2012, UZA

44 (17%): intra-uterine death/TOP

208/252 (82%): live borns

17 (8%): comfortcare after counselling

191/208 (92%): actively resuscitated

66: died <28d

125/208 (60%): survivors at d28

16: died >28d
Patients

n= 252: GA 23 – 26 6/7, 2002-2012, UZA
208/252 (82%): live borns

long-term survivors: 109/208 (52%)
lost to follow-up: 19
complete follow-up data at 12M: 88 (80%)
complete follow-up data at 24M: 59 (54%)
complete follow-up data >5y: 27
## Survival

<table>
<thead>
<tr>
<th></th>
<th>data UZA</th>
<th>EPIcure</th>
<th>EXPRESS</th>
<th>VICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23 – 26 6/7</td>
<td>22 – 26 6/7</td>
<td>22 – 26 6/7</td>
<td>n= 257</td>
</tr>
<tr>
<td></td>
<td>n= 208</td>
<td>n= 707</td>
<td>n= 707</td>
<td></td>
</tr>
<tr>
<td>comfort care</td>
<td>8%</td>
<td>9%</td>
<td>9,8%</td>
<td>25%</td>
</tr>
<tr>
<td>survival</td>
<td>52%</td>
<td>52%</td>
<td>70%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>(19-65)</td>
<td>(10-82)</td>
<td>(45-90)</td>
<td></td>
</tr>
<tr>
<td>inborn</td>
<td>58%</td>
<td>70%</td>
<td>81%</td>
<td></td>
</tr>
<tr>
<td>survival + severe disability</td>
<td>22%</td>
<td>19%</td>
<td>11%</td>
<td>3,7%</td>
</tr>
<tr>
<td>survival free of disability</td>
<td>50%</td>
<td>34%</td>
<td>42%</td>
<td>51%</td>
</tr>
</tbody>
</table>

## Short term morbidity

- **CLD**: Data UZA 45.5%, Epibel 2004 Pediatrics 23.0%, Epicure 2012 BMJ 23.0%, NICHD 2010 Pediatrics 42.0%.
- **IVH ≥ 3**: Data UZA 15.0%, Epibel 2004 Pediatrics 22.0%, Epicure 2012 BMJ 23.0%, NICHD 2010 Pediatrics 18.0%.
- **PVL ≥ 2**: Data UZA 6.0%, Epibel 2004 Pediatrics 10.0%, Epicure 2012 BMJ 3.0%, NICHD 2010 Pediatrics 0%.
- **Severe ROP**: Data UZA 19.0%, Epibel 2004 Pediatrics 20.0%, Epicure 2012 BMJ 21.0%, NICHD 2010 Pediatrics 10.0%.
- **NEC**: Data UZA 9.0%, Epibel 2004 Pediatrics 23.0%, Epicure 2012 BMJ 8.0%, NICHD 2010 Pediatrics 11.0%.
Neurosensorial outcome

<table>
<thead>
<tr>
<th>Cerebral Palsy</th>
<th>Review Literature</th>
<th>Data UZA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>14.6% (7.3 – 28.2)</td>
<td>10.1%</td>
</tr>
<tr>
<td>Spastic</td>
<td>96%</td>
<td>100%</td>
</tr>
<tr>
<td>Bilateral</td>
<td>73%</td>
<td>55%</td>
</tr>
<tr>
<td>Diplegia</td>
<td>60%</td>
<td>34%</td>
</tr>
<tr>
<td>Severe</td>
<td>34%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Long term morbidity

<table>
<thead>
<tr>
<th>Condition</th>
<th>NICHD 2005 (18m)</th>
<th>EPICure 2000 (30m)</th>
<th>VICS 1997 (24m)</th>
<th>UZA (24m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebral palsy</td>
<td>18-20%</td>
<td>18%</td>
<td>8-14%</td>
<td>10.2% (9/88)</td>
</tr>
<tr>
<td>Visual deficit</td>
<td>2-4%</td>
<td>2%</td>
<td>5%</td>
<td>3.7% (3/80)</td>
</tr>
<tr>
<td>Hearing deficit</td>
<td>1.8-3.4%</td>
<td>2%</td>
<td>1%</td>
<td>3.9% (3/76)</td>
</tr>
<tr>
<td>MDI &lt;70</td>
<td>37-42%</td>
<td>30-40%</td>
<td>30-40%</td>
<td>15.5% (9/58)</td>
</tr>
<tr>
<td>PDI &lt;70</td>
<td>26-32%</td>
<td>20-30%</td>
<td>20-30%</td>
<td>42% (25/59)</td>
</tr>
<tr>
<td>Median MDI</td>
<td>72-75</td>
<td>84</td>
<td>96</td>
<td>86</td>
</tr>
<tr>
<td>Median PDI</td>
<td>81-82</td>
<td>87</td>
<td>missing</td>
<td>75</td>
</tr>
</tbody>
</table>

Cognitive outcome at school age

Review S. Johnson (Sem Fetal Neonatal Med. 2007)
Mental development

<table>
<thead>
<tr>
<th></th>
<th>12M MDI</th>
<th>24M MDI</th>
<th>≥ or &gt;5Y IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>84</td>
<td>58</td>
<td>27</td>
</tr>
<tr>
<td>median</td>
<td>96</td>
<td>86</td>
<td>91</td>
</tr>
<tr>
<td>% -2SD</td>
<td>10,7</td>
<td>15,5</td>
<td>14,8</td>
</tr>
<tr>
<td>% -1SD</td>
<td>29</td>
<td>40</td>
<td>37</td>
</tr>
</tbody>
</table>

ELGAN UZA
Cognitive outcome and positive parenting

Shah et al., Infant Behavior and Development 2013: 36

Family centered care

Model of family support used in the neonatal hospital ProntoLinda
Behavioural problems

Consistent phenotype

Mean z-scores for eight problem scales in ELBW children. The null-line is the z-score for the country-specific reference group.

Hille et al. Lancet 2001

Prevalence of ASS

Kuzniewicz et al., J. Pediatr. 2014: 164, 1
Conclusions: survival

-52% survival
-22% severe disability
-50% free of disability

*denominator and comfort care
*survival and disability
*other factors besides GA
*need for research on postnatal outcome

Conclusions: short term morbidity

-severe IVH + cPVL: 21%
-ROP = or > 3: 19%
-CLD (36wks): 45%
-CP: 10%

spastic diplegia and hemiplegia
1/3 severe (non-ambulant) CP
-severe visual deficit: 3,7%
-severe hearing deficit: 3,9%
Conclusions: long-term morbidity

- MDI <70 at 24M: 15%
- PDI <70 at 24M: 40%

*limited predictive validity for school-age outcomes
*effect of positive parenting

Conclusions: behaviour and education

- autism spectrum disorder: 19% (11/58)
- education:
  - normal school: 54%
  - normal school + special needs: 14%
  - special school: 30%
  - institution: 2%
Thanks for your attention

Thanks to MIC-NIC team UZA
and to the children and their parents