Castor oil for induction of labour
Helpful or harmful?
A database cohort study
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Castor Oil

- Derived from plant: Ricinus Communis
- Toxic
- Used in 4000 before Christ (Egypt)
- Oil, plastics, cosmetics
- FDA registered laxative
- Induction of labour
Background

- “Midwife cocktail” = 60 cc of castor oil mixed with fruit juice, taken orally
- Mainly used in home based settings
- Questionnaire among American midwives: 52% uses herbs, most (93%) castor oil*

* McFarlin et al J nurse midwifery 1999
Working Mechanism Castor Oil

- increased activity in the bowel
- increased production of prostaglandin E2 in uterine tissues

Gao et al. Zhonghua Fu Chan Ke Za Zhi. 1999
Literature

• 4 small clinical trials (n = 169)
• 1 retrospective analysis (n = 107)
• 1 cochrane review (n = 52)
• 1 case report about uterine rupture (n = 1)

Azhari et al. Saudi Med J. 2006
Kelly et al. Cochrane Database Syst Rev. 2001
Davis Journal of nurse-midwifery. 1984
Contradictory Results

- *Castor oil* is a dehydrating, debilitating, drastic drug; it should be used on machinery only
  

- *Castor oil*, which is more economical and convenient than oxytocin, can be used safely and effectively to induce labour
  
  Davis L. *Journal of nurse-midwifery*. 1984
Castor oil in SMRU clinics
ANC

• Set up in 1986, detection of malaria
• Records filed and stored
• When EGA > 40 weeks, a doctor assess the pregnancy
• If women complain, some doctors would prescribe castor oil
Delivery facility

- All women encouraged to deliver in the SMRU delivery room
- During delivery WHO partograph
Objective

• To assess the safety and effectiveness of castor oil for induction of labour
Design

• A database cohort study

Setting

• SMRU Antenatal Clinics and delivery facility on the Thai-Burmese border
Methods

• Manual search through ANC cards
• May 2005-April 2007
• Women with an EGA > 40 weeks
• 2 groups: with and without castor oil
Safety Outcomes of the Neonate

- fetal distress
- meconium stained amniotic fluid
- Apgar Scores
- neonatal resuscitation
- stillbirth
Safety Outcomes of the Mother

- hyperstimulation of the uterus
- abnormal maternal blood pressure
- PPH
- severe diarrhea
- uterine rupture
Outcomes Effectiveness:

- time to birth
- need for augmentation
- forceps or vacuum
- Caesarian Section
Results

• 634 women
• 36% (227/634) castor oil
• 64% (407/634) no castor oil
Maternal Characteristics

<table>
<thead>
<tr>
<th>Maternal characteristics</th>
<th>Castor oil (n = 227)</th>
<th>No Castor oil (n = 407)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age in years, mean ± SD [min-max]</td>
<td>28 ± 7 [15-45]</td>
<td>28 ± 6 [16-48]</td>
<td>0.50</td>
</tr>
<tr>
<td>Parity, median [min-max]</td>
<td>2 [0-10]</td>
<td>2 [0-10]</td>
<td>0.37</td>
</tr>
<tr>
<td>Gravidity, median [min-max]</td>
<td>3 [1-12]</td>
<td>3 [1-16]</td>
<td>0.62</td>
</tr>
<tr>
<td>Primipara, No. (%)</td>
<td>49 (21.6)</td>
<td>86 (21.1)</td>
<td>0.99</td>
</tr>
<tr>
<td>Teenager (age &lt; 20 years), No. (%)</td>
<td>23 (10.1)</td>
<td>39 (9.6)</td>
<td>0.94</td>
</tr>
</tbody>
</table>

N.A = not applicable
## Safety for the Neonate

<table>
<thead>
<tr>
<th>Newborns outcomes</th>
<th>(n = 186) castor oil</th>
<th>(n = 279) non castor oil</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Still birth</td>
<td>2 (0.9)</td>
<td>1 (0.3)</td>
<td>0.29</td>
</tr>
<tr>
<td>Meconium</td>
<td>47 (24.6)</td>
<td>65 (22.7)</td>
<td>0.66</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>6 (3.1)</td>
<td>7 (2.4)</td>
<td>0.78</td>
</tr>
<tr>
<td>Active resuscitation</td>
<td>12 (6.5)</td>
<td>13 (4.7)</td>
<td>0.41</td>
</tr>
<tr>
<td>Apgar Score 1 min, median [min – max]</td>
<td>8 [3 – 9]</td>
<td>8 [1–10]</td>
<td>0.30</td>
</tr>
<tr>
<td>Apgar Score 5 min, median [min – max]</td>
<td>9 [7 – 10]</td>
<td>9 [3–10]</td>
<td>0.21</td>
</tr>
</tbody>
</table>
## Safety for Mother

<table>
<thead>
<tr>
<th>Maternal outcomes (partograph available)</th>
<th>(n = 191) Castor oil</th>
<th>(n = 286) Non Castor oil</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal blood pressure</td>
<td>5 (2.6)</td>
<td>3 (1.0)</td>
<td>0.17</td>
</tr>
<tr>
<td>Hyper stimulation of the uterus</td>
<td>1 (0.5)</td>
<td>6 (2.1)</td>
<td>0.25</td>
</tr>
<tr>
<td>Post Partum Hemorrhage</td>
<td>4 (2.1)</td>
<td>6 (2.1)</td>
<td>1.00</td>
</tr>
<tr>
<td>Severe diarrhea</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.00</td>
</tr>
<tr>
<td>Uterine rupture</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.00</td>
</tr>
</tbody>
</table>
## Effectiveness

<table>
<thead>
<tr>
<th></th>
<th>Castor oil (n = 191)</th>
<th>Non castor oil (n = 286)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time to birth</td>
<td>5 days (IQR 3-8)</td>
<td>4 days (IQR 2-8)</td>
</tr>
</tbody>
</table>
Effectiveness

• No difference in time to birth
  (HR 0.99 (95% CI: 0.81 to 1.20; n= 509)
# Effectiveness of Contractions

(\textit{partograph available})

<table>
<thead>
<tr>
<th></th>
<th>(n= 191)</th>
<th>(n= 286)</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmentation</td>
<td>31 (16.2)</td>
<td>46 (16.1)</td>
<td>1.00</td>
</tr>
<tr>
<td>Vacuum or forceps</td>
<td>16 (8.4 )</td>
<td>16 (5.6 )</td>
<td>0.26</td>
</tr>
<tr>
<td>Caesarean Section</td>
<td>3 (1.6)</td>
<td>4 (1.4)</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Conclusion

• Castor oil for induction:

Not harmful, not helpful
Advice

• We do not recommend the use of castor oil to induce labour
Acknowledgements

• Special thanks to all Karen midwives who work or have worked in the ANC team and in the delivery unit of SMRU in Maela camp and to the computer and administrative department.