Betamethasone for Women at risk for Late Preterm Delivery

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Financial Disclosures

No financial disclosures to report
Learning Objectives

- Betamethasone and lung maturity in the late preterm period
- Complications of late preterm steroids
- Apply guidelines to case scenarios
Outline

- Mechanism of action of corticosteroids
- Corticosteroids < 34w
- ALPS study - NEJM April 2016
- SMFM and ACOG recommendations
- Case scenarios
Corticosteroids

- **Mechanism of action:**
  - **Effect:** 1-7 days after first dose
  - **Betamethasone:** 12mg IM q24h for 2 doses
  - **Dexamethasone:** 6mg IM q12h for 4 doses
Cochrane Review 2006

Benefits if GA < 34w:

- 2831 women
- 60% received 2 doses

Primary Outcome Composite

- CPAP or HFNC ≥ 2h
- FiO2 > 0.30 for ≥ 4h
- Mechanical ventilation
- ECMO
- Stillbirth, neonatal death in first 72h
Inclusion Criteria

- singleton
- 34w0d – 36w5d
- membrane rupture
- preterm labor
- planned delivery
Exclusion Criteria

- prior steroid course
- twin gestation
- fetal anomaly
- chorioamnionitis
- diabetes
- SVE ≥ 8cm
- & SVE ≥ 3cm
- nonreassuring fht
## Results - Benefits

<table>
<thead>
<tr>
<th>Table 2. Neonatal Respiratory Outcomes.†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td><strong>Primary outcome‡</strong></td>
</tr>
<tr>
<td>CPAP or high-flow nasal cannula for ≥2 continuous hr</td>
</tr>
<tr>
<td>Mechanical ventilation</td>
</tr>
<tr>
<td><strong>Severe respiratory complication‡‡</strong></td>
</tr>
<tr>
<td>CPAP or high-flow nasal cannula for ≥12 continuous hr</td>
</tr>
<tr>
<td>Fraction of inspired oxygen of ≥0.30 for ≥24 continuous hr</td>
</tr>
<tr>
<td><strong>Need for resuscitation at birth‡§</strong></td>
</tr>
<tr>
<td><strong>Respiratory distress syndrome</strong></td>
</tr>
<tr>
<td><strong>Transient tachypnea of the newborn</strong></td>
</tr>
<tr>
<td><strong>Bronchopulmonary dysplasia</strong></td>
</tr>
<tr>
<td><strong>Surfactant use</strong></td>
</tr>
<tr>
<td>Composite of respiratory distress syndrome, transient tachypnea of the newborn, or apnea</td>
</tr>
<tr>
<td>Pulmonary air leak</td>
</tr>
</tbody>
</table>
### Results - Risks

**Table 3. Other Secondary Neonatal Outcomes.**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Betamethasone (N=1427)</th>
<th>Placebo (N=1400)</th>
<th>Relative Risk (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia — no. (%)▷</td>
<td>343 (24.0)</td>
<td>210 (15.0)</td>
<td>1.60 (1.37–1.87)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median time until first feeding (IQR) — hr</td>
<td>5.5 (1.4–24.7)</td>
<td>9.9 (1.7–29.1)</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Feeding difficulty — no. (%)</td>
<td>211 (14.8)</td>
<td>223 (15.9)</td>
<td>0.93 (0.78–1.10)</td>
<td>0.40</td>
</tr>
<tr>
<td>Hyperbilirubinemia — no. (%)</td>
<td>167 (11.7)</td>
<td>140 (10.0)</td>
<td>1.17 (0.95–1.40)</td>
<td>0.15</td>
</tr>
<tr>
<td>Hypothermia — no. (%)</td>
<td>132 (9.3)</td>
<td>112 (8.0)</td>
<td>1.16 (0.91–1.47)</td>
<td>0.24</td>
</tr>
<tr>
<td>Admission to intermediate care nursery or NICU — no. (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any duration</td>
<td>596 (41.8)</td>
<td>629 (44.9)</td>
<td>0.93 (0.85–1.01)</td>
<td>0.09</td>
</tr>
<tr>
<td>Duration ≥3 days</td>
<td>470 (32.9)</td>
<td>518 (37.0)</td>
<td>0.89 (0.80–0.98)</td>
<td>0.03</td>
</tr>
<tr>
<td>Median length of hospital stay (IQR) — days</td>
<td>7 (4–12)</td>
<td>8 (4–13)</td>
<td>0.20</td>
<td></td>
</tr>
</tbody>
</table>
Take Home Points

- The ALPS study showed
  - 20% decreased need for respiratory support in betamethasone group
  - BUT -
  - 60% increased rates of hypoglycemia
Betamethasone for 34w0d-36w6d at risk for delivery in 7d

SMFM
- PTL: dilation ≥ 3cm or effacement ≥ 75%
  - No tocolysis
- Indication for early delivery, do not administer until a definite plan for delivery has been made

ACOG
- Avoid in women with chorioamnionitis
- No tocolysis, do not postpone delivery for steroids
- Do not repeat steroids if received previously in pregnancy
- Monitor newborns for hypoglycemia
Case Scenario - 1

- 38yo G2P0101 at 34w5d presents with complaint of leakage of clear fluid
- Sterile speculum exam shows evidence of rupture with cervix visually closed

- What are your next steps?
Case Scenario - 1

- Twelve hours after her first betamethasone shot, she develops contractions

- What do you do next?
18yo G1P0 at 35w2d sent to triage for elevated blood pressure in office
Initial BPs 162/70, 156/101

Denies changes in vision, epigastric/ruq pain, had a mild headache yesterday afternoon spontaneously remitted

What are your next steps?
Case Scenario - 2

- Labs are significant for Hct 30.1, PLT 175, Cr 0.89, AST 61, ALT 70, urine p:c 278
- Fetal well being
Case Scenario - 2

- Two hours later repeat BP 162/101, 170/102
- Headache has come back and is worsening

- What are your next steps now?
- Are you going to give betamethasone?
Take Home Points

- The ALPS study showed
  - decreased need for respiratory support in betamethasone group
  - BUT -
  - increased rates of hypoglycemia
Take Home Points

- Consider betamethasone in:
  - Preterm Labor: 6 ucx/h and 3-7cm dilation or 75% effaced
  - PPROM: <3cm dilation, < 6ucx/h
  - Clinically indicated delivery 34w0d – 36w5d
Take Home Points

- Do not delay delivery or give tocolysis

- Avoid in chorioamnionitis, diabetes, prior corticosteroid course

- Monitor newborns for hypoglycemia
Acknowledgements

- Joe Breuner, MD, Fellowship Director
- Co-fellows: Sarah Belensky, Eduardo Duquez, Alicia Parsons, Midhuna William
- Liz Stahl, Fellowship Administrator
- Perinatologists and Laborists


Saccone, G and Berghella, V. Antenatal corticosteroids for maturity of term or near tearn fetsus: Systematic review and meta-analysis of randomized controlled trials. BMJ 2016; 355: i5044
