Postnatal Betamethasone Decreases Respiratory Index in Ventilated Extremely Low Birth Weight Neonates Compared to Conventional Care

Yuanyi Murray  
New York Medical College

Sanjeet Panda  
New York Medical College

Dina Finkel  
New York Medical College, dina_finkel@nymc.edu

Vanessa Mercado  
New York Medical College, vanessa_mercado@nymc.edu

Edmund F. La Gamma  
New York Medical College, edmund_lagamma@nymc.edu

Follow this and additional works at: https://touroscholar.touro.edu/nymc_fac_posters

Part of the Pediatrics Commons, and the Respiratory Tract Diseases Commons

Recommended Citation


This Poster is brought to you for free and open access by the Faculty at Touro Scholar. It has been accepted for inclusion in NYMC Faculty Posters by an authorized administrator of Touro Scholar. For more information, please contact jogrady@nymc.edu.
Postnatal Betamethasone Decreases Respiratory Index in Ventilated Extremely Low Birth Weight Neonates Compared to Conventional Care

Yuanyi Murray MD, Sanjeet Panda MBBS, Dina Finkel MD, Vanessa Mercado MD, Edmund F. LaGamma MD
Division of Newborn Medicine, Department of Pediatrics, New York Medical College, Maria Fareri Children’s Hospital, Valhalla NY 10595

Background

Bronchopulmonary dysplasia (BPD) is a major complication of ventilatory care and FiO2, which rise up to 50% of ELBW neonates. A 2010 AAP Policy indicated that glucocorticoids may be considered for ELBWs on mechanical ventilation > 7 day postnatal age to abate progression of BPD. For > 16 years, we used postnatal BETA in lieu of dexamethasone or hydrocortisone to decrease ventilator support in high risk neonates because of its better safety profile (DeCastro, et al J Perinatol 29:297, 2009).

Betamethasone has been used in pregnancy for over 20 years with an unprecedented high level of safety and efficacy. (Christensen HD et al, J Soc Gynecol Invest 1997; 4: 130–134)

Why Betamethasone (BETA) ?

- Antenatal BETA has been associated with a decreased risk of cystic periventricular leukomalacia (PVL) when compared to dexamethasone or the absence of glucocorticoid therapy (Baud O et al, N Engl J Med 1999; 341: 1190–1196)
- Betamethasone has been used in pregnancy for over 20 years with an unprecedented high level of safety and efficacy.
- The CNS penetration of BETA is lower compared to dexamethasone because of lower lipid solubility and higher binding to serum proteins.

Objectives

To determine whether low dose (0.125mg/kg IM, short course (every 24 hours for 3 days)) BETA between 7-30 day postnatal age would reduce the respiratory index in ELBWs vs. receiving conventional care (SRX, no steroid controls).

Methods

- This is an IRB approved, retrospective chart review from Jan 2013 – Dec 2015 of ELBWs who were intubated, ventilated and required FiO2 > 0.35 between 7-30 day postnatal age. Patients who received low dose BETA (0.125mg/kg IM Q24hr) for short duration (3d) were compared to a cohort who fulfilled entry criteria without BETA.
- FiO2, and respiratory index (mean airway pressure x FiO2) were calculated at -7,-3, 0, +1, +2, +3, and +7d after initiation of BETA along with demographics, respiratory co-morbidities, and 2-way repeated measures ANOVA was used for statistical analysis.

Results

- Over the 3 year period of 247 ELBWs admitted, data analyzed included 25 pts who received BETA and 26 controls.
- From -7d to 0d, average FiO2 was unchanged in both groups. At initiation of BETA, FiO2 was 0.67±0.24 & 0.45±0.16 (p<0.001) and 7±3.5 & 4±1.9 (p=0.001) for BETA vs. control.
- PIP, Respiratory Index (RI) and FiO2 decreased at +7d compared to 0d (p<0.001 for PIP, p=0.02 for RI, p=0.03 for FiO2), but no change in the control group.
- No significant difference in weight gain, hyperglycemia, uremia, iNO use, infection, or NEC between the groups.
- Total number of ventilator days were 59±42 & 53±48 respectively and rate of BPD (O2 requirement at 36 weeks) were 88% (21/24) vs. 77% (20/26); p=ns.

Conclusion

- There’s no decrease in ventilator days or BPD with administration of BETA. Long term neurodevelopmental evaluations are in progress.
- We speculate that our clinicians selected patients with higher RI and FiO2 who may be too sick to lower BPD.
- There’s no decrease in ventilator days or BPD with administration of BETA. Long term neurodevelopmental evaluations are in progress.
- A prospective RCT is in progress. We seek to determine if low-dose betamethasone is a suitable alternative corticosteroid treatment for evolving BPD.