Comparing Non-Invasive Respiratory Modalities in Treatment of Transient Tachypnea in The Newborn in Late Preterm and Term Neonates

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ABSTRACT

Background: Transient tachypnea of the newborn (TTN) is a parenchymal lung disorder due to delayed resorption and clearance of fetal alveolar fluid resulting in pulmonary edema, poor lung compliance and atelectasis. Respiratory support is either high flow nasal cannula (HFNC), continuous positive airway pressure (CPAP) or bubble continuous positive airway pressure (BCPAP). There are no studies comparing HFNC, CPAP and BCPAP in management of TTN in late preterm (LP) and term neonates.

Objective: To determine differences in HFNC, CPAP, BCPAP in treatment of TTN as measured by duration of ventilation and length of stay (LOS).

Design/Methods: Retrospective chart review of LP and term neonates born in Flushing Hospital Medical Center from 2012 to 2018 with diagnosis of TTN by chest radiograph and required HFNC (G1), CPAP (G2) or BCPAP (G3). Exclusion criteria included neonates with gestational age (GA) <34 weeks or >42 weeks, respiratory distress due to sepsis, pneumonia or cardiac condition. Data collected include GA, infant of diabetic mother (IDM), negative blood culture by 48 hours, mode of ventilation chosen upon admission, duration of ventilator support and LOS. Data were analyzed using SPSS software, odds-ratio, p<0.05 was considered significant.

Results: Of 400 charts reviewed, 225 met exclusion criteria. Of remaining 175, 55% were male and 80% were term. G1 69/175 (40%) received HFNC, G2 102/175 (58%) CPAP and G3 4/175 (2%) BCPAP. Regression analysis of type of noninvasive mechanical ventilation predicting duration of mechanical ventilation G1 vs G2, t=0.88, p=0.38 and LOS t=0.18, p=0.86. LP vs term neonates t=8.92, p<.01, IDM 32/175 (18%) t=2.18, p=.03 and negative blood culture by 48 hours 76/175 (43%), t=2.18, p=0.03 were independent predictors of LOS.

Conclusion(s): In our small sample, different modes of non-invasive respiratory support (HFNC and CPAP) for managing TTN were equal for length of respiratory support and LOS in both LP and term. There were not enough neonates on BCPAP to be included in our analysis.

INTRODUCTION

- Transient tachypnea of the newborn (TTN) is a parenchymal lung disorder due to delayed resorption and clearance of fetal alveolar fluid.
- TTN is the most commonly diagnosed respiratory condition in term newborns.
- The natural history of TTN is either self limited or requiring respiratory support.
- Respiratory support for patients include high flow nasal cannula (HFNC), continuous positive airway pressure (CPAP) or bubble CPAP.
- There are no studies comparing non invasive respiratory modalities in management of TTN in late preterm and term neonates.

OBJECTIVE

To determine if HFNC is as effective as CPAP or Bubble CPAP for TTN in late preterm and term neonates.

METHODS

- **Design**: Retrospective chart review
- **Setting**: Flushing Hospital Medical Center NICU
- **IRB**: Approved by Flushing Hospital Medical Center
- **Time Frame**: 2012 to 2018
- **Inclusion criteria**: Late preterm and term neonates with TTN noted on CXR requiring non invasive respiratory support
- **Exclusion criteria**: Neonates born <34 weeks or >42 weeks**,** have respiratory distress due to causes other than TTN, sepsis, cardiac condition
- **Statistical analysis**: Microsoft Excel, SPSS software, odds-ratio, p<0.05 was considered significant

RESULTS

Charts: 175/400 met inclusion criteria
Gender: male 55%
Gestational age: term 80%, late preterm 20%
Respiratory support: HFNC 40%
CPAP 58%
BCPAP 2%

Comparing LOS: HFNC vs CPAP, figure 1
Comparing length of respiratory support: HFNC vs CPAP, figure 2

Figure 1: Length Of Stay

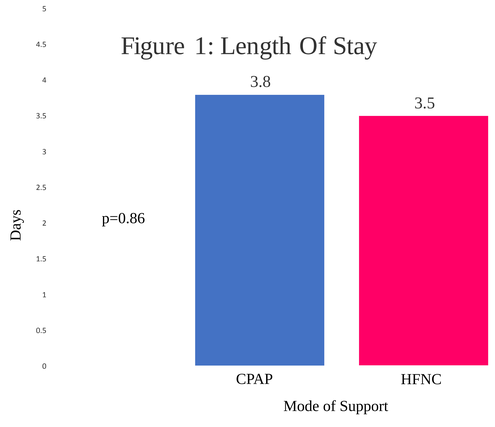
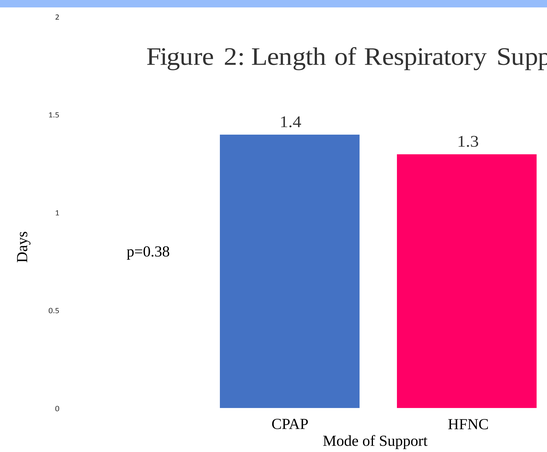


Figure 2: Length of Respiratory Support



CONCLUSIONS

- HFNC and CPAP used in managing TTN in LP and term neonates were equal for length of respiratory support and LOS.
- There were not enough neonates on BCPAP to be included in our analysis.

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