TO STUDY THE RESPIRATORY SUPPORT USED IN PRETERM NEONATES IN A TERTIARY CARE CENTRE

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ABSTRACT

Objective: To study the pattern of respiratory support used in preterm neonates born at 24 weeks gestation to 36 completed weeks.

Study Design: Observational study

Duration: 1st Jan 2015 to 31st March 2016

Study Site: A tertiary care Centre Hi tech medical college, Bhubaneswar

Study Population: The study included all neonates born at gestation 24 0/7wks to 366/7 weeks with respiratory distress within 24 hours of birth.

Methods: Respiratory distress was assessed clinically by either using Silverman score or downe score.

The type of respiratory support (whether O2 by hood box, Bubble CPAP, Mechanical ventilation with or without surfactant therapy) needed by neonates was assessed & recorded. Neonates were grouped according to the gestational ages into groups: Those who received CPAP alone, mechanical ventilation use, both CPAP & mechanical ventilation use or O2 by hood box

Results: Out of the 254 premature neonates, eligible neonates were 68, who required respiratory support. CPAP alone was required, 19 neonates (70.3%) babies in very preterm category as compared to 5 (45%) & 16(53.3%) neonates in extremely preterm moderate to late preterm category respectively. Mechanical ventilation (SIMV –PS) alone) was required in 18% of extreme preterm neonates, 7.4% of very preterm & 16% of moderate preterm neonates. CPAP failure was maximum in extreme preterm group (36.3%). Respiratory distress syndrome was the foremost cause of respiratory distress requiring respiratory support in preterm neonates 75% followed by TTN & MAS.

Conclusion: Most of the babies born pattern can be managed by noninvasive respiratory support i.e. NCPAP initiated by early after birth.

Keywords: CPAP, RDS, Mechanical ventilation

INTRODUCTION

Preterm birth defined as child birth occurring at less than 37 completed weeks or 259 days of gestation is a major determinant of neonatal morbidity and mortality with long term adverse health consequences [1]-[3]. Infants born preterm compared to term infants experience more difficulty with feeding, blood glucose control, jaundice, temperature instability, Apnoea, respiratory distress and sepsis either singly or in combination. Worldwide, preterm deaths constitute 28% of the 4 million annual new born deaths with 99% of these deaths occurring in developing countries.

In newborns and premature infants unstable respiratory patterns tend to decline with age, suggesting important developmental differences in respiratory regulation during early postnatal life. A pattern of regular breathing interrupted by periods of insufficient breathing (hypopneas) or apneas is common. The respiratory rhythm is generated in the central nervous system by a group of respiratory neurons that forms a neural oscillator and drives the respiratory muscles. It has been proposed that immaturity of these brain stem rhythm generators and immature central and peripheral chemoreceptors may be the major underlying factors responsible for apnea or hypopnea in infants. Preterm infants have a poor respiratory drive, weak muscles, flexible ribs, surfactant deficiency, and impaired lung liquid clearance, which make it difficult for them to breathe easily at birth.
Prematurity is one of the leading causes of neonatal deaths, accounting for about 24-28% of neonatal deaths. Although recent advances in the perinatal care, use of antenatal corticosteroids, postnatal surfactant therapy and availability of modern ventilatory techniques have led to markedly improved survival of premature infants during the last two decades, disorders related to short gestation and low birth weight are still significant causes of infant morbidity and mortality.

A neonate has an acceptable respiratory effort, even the smallest and youngest of these patients are now being supported noninvasively using gentler forms of mechanical respiratory support (eg, continuous positive airway pressure). Even when invasive ventilation is required, strategies are now more focused than ever on how quickly patients can be liberated from invasive support.

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**METHODS**

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**RESULTS**

Out of the 254 premature neonates admitted from 1st Jan 2015 to March 31st 2016, eligible neonates were 68, who required respiratory support. Mean birth weight was 1509±636 grams, Mean gestational age was 31±3.7 weeks. CPAP alone was required, 19 neonates (70.3%) babies in very preterm category as compared to 5 (45%) & 16 (53.3%) neonates in extremely preterm moderate to late preterm category respectively. Mechanical ventilation (SIMV –PS) alone was required in 18% of extreme preterm neonates, 7.4% of very preterm & 16% of moderate preterm neonates. CPAP failure was maximum in extreme preterm category (36.3%). Respiratory distress syndrome was the foremost cause of respiratory distress requiring respiratory support in preterm neonates 75% followed by TTN & MAS.
**CONCLUSION**

Most of the babies born pattern can be managed by noninvasive respiratory support i.e. NCPAP initiated by early after birth. Continuous Positive Airway Pressure (CPAP) is a well-established mode of respiratory support in preterm newborns.

Surfactant requirement has also come with nearly us of NCPAP in very preterm & moderately preterm neonates (27 to 36 6/7 weeks of gestation).

None had early onset sepsis as the cause of respiratory distress in our study.

In our study, 14.7% of the enrolled Neonates developed BPD, out of these, 7.3% had severe BPD & received postnatal steroid.
Antenatal steroid administration was received by 69% of the newborns. Prenatal steroid use was more frequent in very preterm and moderate preterm category in preterm birth. Use of antenatal corticosteroids, postnatal surfactant therapy and availability of modern ventilatory techniques have led to markedly improved survival of premature infants.

REFERENCES