Predictors of Mortality in Neonates with Respiratory Distress in A Tertiary Care Centre

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Abstract

Objective: to identify risk factors of mortality in neonates with respiratory distress

Design: a prospective study

Setting: neonatal intensive care unit in a tertiary level care (Hi-Tech Medical College, hospital in Bhubaneswar)

Participants: Neonates admitted with respiratory distress over a period of 12 months (May 2015 - April 2016)

Outcome measures: risk factors for death analysed were antenatal factors i.e., per vaginal bleed, maternal fever, meconium stained liquor, foul smelling liquor, and prolonged rupture of membranes. Natal factors such as gestational age, birth weight and in post natal factors, neonatal factors such as presenting complaints, vitals- heart failure, respiratory CRT, SpO2 (pre ductal and post ductal) and complications like apneic attacks, sepsis, shock.

Methods: all neonates with respiratory distress, irrespective of gestational age were included. Risk factors were compared between those died and those who survived. Risk factors significantly associated with death were analysed.

Results: out of 100 included neonates, 40 (40%) died. In univariate analysis, Antenatal history of per vaginal bleed, meconium stained liquor, foul smelling liquor, and prolonged rupture of membranes, birth weight <1.5 kg, gestational age <37 weeks, preductal SpO2 of <80%, shock, apneic attacks, positive sepsis screen were found to be significantly associated with death.

Conclusion: PV bleed, shock, and apneic attacks were independent predictors of mortality in a neonate with respiratory distress and can be used as referral criteria for early referral to a tertiary level newborn unit from special care newborn units (SNCU).

Keywords: death, neonate, respiratory distress, SNCU.

I. Introduction

Respiratory distress is one of the commonest causes of admission of a neonate to the neonatal intensive care unit (NICU). It is a challenging problem and accounts for significant morbidity and mortality. In various Indian studies, it occurred in up to four to seven percent of the neonates. There are various factors which determine the progress and outcome in neonatal respiratory distress. The birthweight, gestational age and the degree of respiratory compromise are the key factors which decide the level of care the neonatow would require. Clinical monitoring is most important as sophisticated equipments may not always be available in resource limited settings. Clinical scores such as Downe’s score, Silverman score, APGAR score and ACoRN respiratory score are being used for assessing the severity of respiratory distress while CRIB (Clinical risk index for babies) and SNAPPE (Score for neonatal acute physiology-perinatal extension) are being used for determining illness severity. Calculation of some of the above mentioned scores need estimation of fractional inspired oxygen, arterial blood gas analysis and monitoring of vitals including blood pressure. However, invasive monitoring and ventilator facilities are not available in all the neonatal care units. There is a dearth of studies on role of simple clinical parameters like Downe’s score and pulse oximetry early on during the course of respiratory distress in predicting which neonates may have a higher mortality, need mechanical ventilation and need higher duration of respiratory support.

Simple clinical scores if meticulously documented could be useful to determine the progression of respiratory distress. This would then enable timely transfer of these neonates to higher centres from the primary neonatal care facility available in most of the developing countries. This study was therefore conducted to assess the suitability of simple parameters like birth weight, gestation age, baseline oxygen saturation, APGAR score at five minutes and Downe’s score as predictors of certain short term outcomes like requirement of respiratory support and mortality.

II. Methods

All neonates with respiratory distress, irrespective of gestational age were included. Risk factors were compared between those died and those who survived. Risk factors significantly associated with death were analysed.
Out of 100 included neonates, 40 (40%) died on univariate analysis. Antenatal history of per vaginal bleed, meconium stained liquor, prolonged rupture of membrane, birth weight <1.5 gestational age <37 weeks, preductal SpO2 of <80%, shock, apneic attacks, positive sepsis screen were found to be significantly associated with death.

**III. Conclusion**

PV bleed, shock, and apneic attacks were independent predictors of mortality in a neonate with respiratory distress and can be used as referral criteria for early referral to a tertiary level newborn unit from special care newborn units (SNCU).

**References**


