

# A Clinical Study of Respiratory Distress In Newborn and its Outcome

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## ABSTRACT

**Introduction:** Respiratory distress in neonates is one of the important clinical manifestations of a variety of disorders of the respiratory system and non respiratory disorders. It has been estimated that 40-50% of all the perinatal deaths occur following respiratory distress.

**Aims and Objectives:** 1. To estimate the proportion of respiratory distress in the newborn period.

2. To know the etiological factors of respiratory distress.

3. To study the morbidity and mortality of respiratory distress in nicu.

**Materials and Methods:** All newborn babies admitted to kims hospital nicu during a period of 1 year from april 2002 to march 2003 who developed respiratory distress were studied. These admissions comprised of neonates delivered in our hospital (in-borns)

as well as those neonates who were referred to our nicu from other hospitals and delivery centers (out-borns).

**Results:** The present study is descriptive in nature where clinical spectrum of respiratory distress in neonates and its outcome were studied. 553 Neonates were admitted in NICU during the study period, among them 76(13.7%) Developed respiratory distress. In the overall study 92.2% Survived with 6 deaths. 4 Deaths were due to preterm with RDS, 1 due to preterm with BA with RDS and 1 due to BA with RDS and sepsis. Most of the deaths were due to RDS (83%).

**Conclusion:** Transient tachypnoea was the main cause of respiratory distress followed by RDS. In most of the cases X-ray findings correlated with the clinical picture. ABG was found normal in most of the cases. RDS was the main cause for ventilation.

**Key Words:** Respiratory Distress, Nicu, Birth Asphyxia

## INTRODUCTION

Respiratory distress in neonates is one of the important clinical manifestations of a variety of disorders of the respiratory system and non respiratory disorders. It has been estimated that 40-50% of all the perinatal deaths occur following respiratory distress. Schaffer [1] and Cunningham [2] Prodham [3] found that RDS is the leading cause of respiratory distress followed by massive aspiration and pneumonia.

There has been a tremendous advances in the management of respiratory distress such as ventilatory therapy with different modes such as CPAP, conventional mechanical ventilation, ultra high frequency jet ventilation, liquid ventilation, surfactant replacement therapy, sophisticated monitoring and extracorporeal membrane oxygenation all have improved the outcome among the babies with respiratory distress. In spite of the varying recent advance in clinching diagnosis and management there has been very less clinical studies on the neonatal respiratory distress in our country. Therefore, there is a

need to know the etiological factors and outcome of the babies with respiratory distress.

This study has been designed to know the etiology, clinical features, management and outcome of the babies with respiratory distress.

## AIMS AND OBJECTIVES

- To estimate the proportion of respiratory distress in the newborn period.
- To know the etiological factors of respiratory distress.
- To study the morbidity and mortality of respiratory distress in NICU.

## MATERIALS AND METHODS

All newborn babies admitted to KIMS Hospital NICU during a period of 1 year from April 2002 to March 2003 who developed respiratory distress were studied. These admissions comprised of neonates delivered in our hospital (in-borns) as well as those neonates who were

referred to our NICU from other hospitals and delivery centers (out-borns).

#### Inclusion criteria

- Both in-born and out-born neonate admitted to NICU with respiratory distress.

#### Exclusion criteria

- Babies more than 28 days.
- Babies weight less than 1000 gms.
- Babies less than 28 wks of age.

Babies were nursed under servo control open care system. The cases were diagnosed clinically by the presence of at least 2 of the following criteria, namely RR of 60/min or more, subcostal indrawing, xiphoid retraction, suprasternal indrawing, flaring of alae nasi, expiratory grunt and cyanosis at room temperature. These infants were examined in detail with particular emphasis on gestational age, sex, weight, cyanosis; they were also assessed by scoring systems using Silverman Anderson scoring system and Downe's scoring system. Respiratory, Cardiovascular and Nervous system were examined in detail. They were kept under constant supervision till discharge or death and treatment was carried out for the specific indication. Retrospective study of the mother's significant antenatal history was taken.

The diagnosis of clinical conditions producing respiratory distress was based mainly on careful scrutiny of the history, clinical and radiological findings. Continuous monitoring of oxygen saturation was done using pulse oxymeter. ABG analysis was done frequently in unstable babies and with changes in ventilator settings. Blood glucose was monitored regularly using the dextrostix, sepsis work up was done when clinically indicated, endotracheal tube and blood culture sensitivity were ordered if septicaemia or pneumonia was suspected.

Oxygen was supplied from an oxygen concentrator, which is a useful equipment to supply oxygen. Ventilator was started in those who required ventilatory support. The settings of the ventilator was varied with the underlying disease and ABG analysis and the aim was to use the minimum possible fractional inspired oxygen concentrator (FiO<sub>2</sub>) to maintain normal blood gases. All babies were monitored for any complication like air leak, congestive cardiac failure, sepsis, PDA, etc.; chest physiotherapy was given during and after ventilation.

Babies were weaned off the ventilator when they showed clinical, radiological improvements and normal blood gases. Dexamethasone (0.2 to 0.4 mg/kg) was given 24 hours prior to expected extubation. The endpoint of the study was hemodynamically stable baby accepting feeds fit to be shifted out of NICU or when baby succumbed to treatment.

## RESULTS

The present study is descriptive in nature where clinical spectrum of respiratory distress in neonates and its

outcome were studied. 553 neonates were admitted in NICU during the study period, among them 76 (13.7%) developed respiratory distress.

Maturity	No. of Infants	No. of Respiratory Distress Babies
Pre-term	158 (28.6)	46 (61.0)
Term	395 (71.4)	30 (39.0)
Total	553 (100)	76 (100)

[Table/Fig-1]: Distribution of subjects according to maturity

Cause	No. of Cases (n=76)	Percentage
TTNB	35	46
RDS	24	31.5
BA	19	25
Pneumonia and sepsis	19	25
MAS	6	7.8
Pneumothorax	2	2.6
CHD(PDA)	1	1.3
Laringomalacia	1	1.3

[Table/Fig-2]: Distribution of Etiology of respiratory distress (n=76)

X-ray Findings	No. of Cases	Percentage
HMD with varying grades	19	25
Hyperinflated	22	29
Infiltration	14	18.4
Pneumothorax	2	2.6
Normal	19	25
Total	76	100

[Table/Fig-3]: Distribution of chest X-ray findings among respiratory distress babies

Treatment Given	No. of Cases (n=76)	Percentage
Oxygen therapy	76	100
Ventilator	16	21
Surfactant	3	4

[Table/Fig-4]: Treatment of respiratory distress babies

Outcome	No. of Babies (n=76)	Percentage
Survived	70	92.2
Deaths	6	7.8
Total	76	100

[Table/Fig-5]: Distribution of outcome of respiratory distress babies

## DISCUSSION

In our study, 30 (39%) babies were term and 46 (61%) were pre term. The study done by Thomas et al., [4] showed 58% of term babies and 42% were preterms developed RD. In Khatua SP et al., study [5] among 182

babies with RD 133 (73%) babies were term infants and 49 (29%) were preterms. In our study among 5 cases of PROM, 2 (40%) developed sepsis and pneumonia. In study conducted by Philip et al., [10] 671% of the cases with history of PROM developed pneumonia and sepsis.

In our study it was observed that 35 (46%) babies had TTNB, 24 (31.5%) babies had RDS, 19 (25%) had BA, 19(25%) babies had pneumonia and sepsis, 6 (7.8%) babies had MAS, 2 (2.6%) babies had pneumothorax, 1 (1.3%) neonates had CHD, 1 (1.3%) neonates had laryngomalacia as a cause for respiratory distress.

According to Tudehope and Smith [6] TTNB is the commonest cause of RD accounting for 41%, he also showed TTNB was more common following caesarean section before labour the reason given that is in absence of labour anticipatory lung fluid clearance will not have occurred.

In the study done by Alok kumar and Bhat B V [7], Transient tachypnea of newborn (TTN) was found to be the commonest (42.7%) cause of RD followed by infection (17.0%), meconium aspiration syndrome (10.7%), hyaline membrane disease (9.3%) and birth asphyxia (3.3%). In our study among 16 neonates who were ventilated 5 expired, i.e., 68% survived and among 3 neonates who were given surfactant all survived. In a study done by Kulkarni M L et al., [8] 51% survived among ventilated babies.

In the overall study 92.2% survived with 6 deaths. 4 deaths were due to preterm with RDS, 1 due to preterm with BA with RDS and 1 due to BA with RDS and sepsis. Most of the deaths were due to RDS (83%). According to Malhotra A K [9] 88% mortality was due to HMD and all cases of TTNB and MAS were survived and 66% of mortality was accounted due to BA and 50% mortality accounted to sepsis and pneumonia. In our study all the deaths were in below 2.5kg babies. According to Malhotra AK [9] most number of deaths were below 2.5 kgs., Respiratory distress accounts for 13.7% of all NICU admissions

Preterm babies were more in no. with male predominance; most of them were delivered vaginally. Antenatal risk factors increase the incidence of RD. Transient

tachypnoea was the main cause of respiratory distress followed by RDS. In most of the cases x ray findings correlated with the clinical picture. ABG was found normal in most of the cases. RDS was the main cause for ventilation. The survival rate was 92.2% among RD cases admitted to NICU. The common cause of death was preterm and RDS.

## CONCLUSION

Respiratory distress accounts for 13.7% of all NICU admissions Preterm babies were more in no. with male predominance; most of them were delivered vaginally. Antenatal risk factors increase the incidence of RD. Transient tachypnoea was the main cause of respiratory distress followed by RDS. In most of the cases x ray findings correlated with the clinical picture. ABG was found normal in most of the cases. RDS was the main cause for ventilation. The survival rate was 92.2% among RD cases admitted to NICU. The common cause of death was preterm and RDS.

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