



AETIOLOGY AND PREVALENCE OF RESPIRATORY DISTRESS IN NEWBORNS DELIVERED IN A TERTIARY CARE HOSPITAL

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ABSTRACT **Introduction:** Respiratory distress is among the most important reasons for admission to a neonatal intensive care unit. 15% of term infants and 29% of late preterm infants admitted to the neonatal intensive care unit experience significant respiratory morbidity. Premature neonates are also more likely to be admitted, i.e. neonates born before 34 weeks of gestation. **Materials and Methods:** In this descriptive study, total 2040 live new-born were selected by purposive sampling technique. Selection within the strata is done for convenience. All these live new-born babies delivered at department of pediatrics, Indira Gandhi institute of child health, Bangalore. During the study period from February 2020 to January 2021 were observed for respiratory distress and the objective was to establish or determine the prevalence and aetiology of respiratory distress in inborn new-born babies. For this study informed consent from parents / guardian were taken. **Results:** The overall number of live inborn births was 2040 through 1 year of study period. Out of which 1484 were spontaneous vaginal deliveries (SVD) while 612 were delivered by caesarean section. Out of these newborns 90 had evolved respiratory distress. The sex ratio between male and female newborn babies was 1:1. 48 newborns were premature, 32 newborns were full term and 10 newborns were post term. **Conclusion:** Among the neonatal problems with significant mortality and morbidity, respiratory distress is one of the commonest causes, while TTN was the commonest aetiology. Others are hyaline membrane disease and meconium aspiration syndrome.

KEYWORDS : Respiratory distress, morbidity, TTN, aetiology.

INTRODUCTION

Respiratory distress is among the most important reasons for admission to a neonatal intensive care unit. 15% of term infants and 29% of late preterm infants admitted to the neonatal intensive care unit experience significant respiratory morbidity. Premature neonates are also more likely to be admitted, i.e. neonates born before 34 weeks of gestation.¹

According to research conducted in JIPMER, Pondicherry, Preterm infants had the highest incidence (30%) followed by post-term infants (20.9 %) and term babies 4.2% [2]. Respiratory distress in a new-born is recognized as one or more signs of the increased breathing activity, such as tachypnea, nasal flaring, chest retraction, or grunting.² Normally, the respiratory rate of new-born respiration is between 40 and 60 breaths per minute. Tachypnea is characterized as a respiratory rate of more than 60 breaths per minute.³ Tachypnea is a mechanism of compensation for hypercarbia, hypoxemia, or acidosis (both metabolic and respiratory, making it a normal, but nonspecific, finding in large in a large variety of cardiovascular, metabolic, or systemic diseases.⁴

Factors that raise the risk of neonatal respiratory disorders include respiratory distress syndrome, intermittent neonatal tachypnea, meconium aspiration syndrome, air leakage, pulmonary hemorrhage, pulmonary edema, congenital structural lung or thoracic defects, etc. Non-respiratory causes of respiratory distress include metabolic disorders such as hypothermia or hyperthermia, hypoglycemia, polycythemia, cardiac disorders, birth asphyxia, metabolic acidosis, and various inborn errors of metabolism.^{5,6}

MATERIALS AND METHODS

In this descriptive study, total 2040 live new-born were selected by purposive sampling technique. Selection within the strata is done for convenience. All these live new-born babies delivered at department of pediatrics, Indira Gandhi institute of child health, Bangalore. During the study period from February 2020 to January 2021 were observed for respiratory distress and the objective was to establish or determine the prevalence and aetiology of respiratory distress in inborn new-born babies. For this study informed consent from parents / guardian were taken.

Inclusion Criteria:

All inborn new-born babies admitted in NICU include term, preterm,

post term up to 28 days.

Babies delivered by caesarean section or vaginal deliveries.

Exclusion Criteria:

babies more than 28 days old born babies with congenital malformations like meningocele, meningomyelocele, encephalocele and anencephaly.

Investigations:

CBC, CRP, blood glucose, blood culture, electrolytes, cranial ultrasound, chest x-rays, pulse oximetry, 2D-Echocardiography. Any new-born babies showing any two or more clinical signs was suspected to have respiratory distress having respiratory rate of ≥ 60 / minute, subcostal / intercostals recessions and expiratory grunt / groaning in addition to these features that is presence of nasal flaring, suprasternal retractions, decrease air entry on auscultation of the chest.

Data was collected for all newborn babies after the initial evaluation and cardio pulmonary management, a detailed history was collected. General information, socioeconomic status, history of mother and her current and previous ante-natal histories were taken which provided indispensable statistics. Intra-partum particulars with peculiar reference to the fetal well-being, quantity and quality of liquor, duration of the rupture of membrane, drugs given to the mother were recorded. Sex, birth weight, Apgar score, resuscitation particulars, and on the basis of last date of menstrual period gestational age was calculated and clinical examination findings expressive of respiratory difficulties were also recorded. Time of onset and the severity of the respiratory distress was documented and the severity was assessed by using Downe's score and Silverman Anderson score. All these data was collected for all new-born include in study with respiratory distress. All new-borns with respiratory distress were managed in NICU.

Investigations related to clinical conditions were obtained in all cases. Sepsis screen and blood culture were indicated when infection was suspected, and echocardiography were done whenever indicated (to ruled out congenital heart disease and to evaluate Persistent pulmonary hypertension). All new-born babies with respiratory distress received supportive and standard care with recording of vital signs and

oxygenation saturation, respiratory support in severe condition as respiratory failure.

Statistical Analysis:

Data was collected for all new born include in our study. Descriptive statistics were used for analysis of results.

RESULTS

Table 1: Causes of respiratory distress in new borns (N=90)

Primary diagnosis	Frequency	Percentage
Transient Tachypnoea of Newborn	31	35%
Respiratory Distress Syndrome	24	27%
Meconium Aspiration Syndrome	16	18.4%
Others (Congenital Heart Disease / Choanal Atresia / Tracheo-Oesophageal Fistula / Congenital Diaphragmatic Hernia / Pierre Robin Syndrome)	12	14.2%
Pneumonia	3	3.3%
Pneumothorax	2	1.8%

overall number of live inborn births was 2040 through 1 year of study period. Out of which 1484 were spontaneous vaginal deliveries (SVD) while 612 were delivered by caesarean section. Out of these newborns 90 had evolved respiratory distress. The sex ratio between male and female newborn babies was 1:1. 48 newborns were premature, 32 newborns were full term and 10 newborns were post term.

The mean age of newly born babies were 210 minutes. In my present study overall respiratory distress prevalence was 4.4%. Out of which prevalence of respiratory distress were 19.2%, 2.2 % and 7 % among preterm, term and post-term respectively. The most important etiology of RD are shown in (Table 1). In this study the commonest cause of respiratory distress was found to be transient tachypnea of newborn (TTN) 35.3% which was followed by hyaline membrane disease (HMD) 27%, and 18.4 % have meconium aspiration syndrome (MAS), 3.3 % and 1.8 % have pneumonia and pneumothorax respectively and 14.2% have other congenital anomalies including CHD (Congenital Heart Disease), CDH (Congenital Diaphragmatic Hernia), choanal atresia, TEF (Tracheo-Esophageal Fistula) & pierre robin syndrome.

DISCUSSION

In this present study overall respiratory distress prevalence was 4.4 %. While other previous studies done in developed countries have prevalence ranging from 3 % to 7 %. These results from our study were equivalent with other results from different studies done in developed countries of world (Alok Kumar et al Malhotra et al).⁷

The factors which influenced the overall distribution of respiratory distress in new-born are geographic distribution, ethnic factors and standard protocol of care in NICU availability These results from our study were equivalent with other results from different studies done in developed countries of world In this study the commonest cause of respiratory distress was found to be transient tachypnoea of newborn (TTN) 35.3% which was followed by hyaline membrane disease (HMD) 27%, and 18.4 % have meconium aspiration syndrome (MAS), 3.3 % and 1.8 % have pneumonia and pneumothorax respectively and 14.2 % have other congenital anomalies including CHD (Congenital Heart Disease), CDH (Congenital Diaphragmatic Hernia), choanal atresia, TEF (Tracheo-Oesophageal Fistula) & Pierre Robin syndrome.^{8,9}

In this study among pre-term newborns the prevalence of respiratory distress was 19.2 % that was comparable to different studies done in other developed countries which range from 28 % to 53 %. In another studies whose result was quite comparable to our study, done in Aga Khan university Hospital Karachi Pakistan, result ranges from 12.8 % to 45 %. In another study whose result ranges from 10 % to 16 % closely correlates with our studies in term and post-term newborns, the prevalence of Meconium aspiration syndrome was found in 18.4% cases.¹⁰

CONCLUSION

Respiratory distress in newborn is one of the commonest causes of admission in NICU, with significant morbidity and mortality. TTN is found in the majority of the cases in term babies whereas hyaline membrane disease is common in preterm babies. TTN is a self-limiting condition which needs only supportive treatment and generally resolves after minimal therapeutic intervention. Giving antenatal corticosteroids to the mother before 37 weeks of gestation can significantly reduce prevalence of HMD. With improvement in obstetrical care, neonatal management, symptomatic care and standard

treatment of respiratory distress reduces the cases because of MAS. Pneumonia, pneumo-thorax, septicemia, CNS causes, congenital heart disease and other congenital malformations are the less common causes of respiratory distress, which are managed by disease-oriented treatment. Hence, to reduce morbidity and mortality due to respiratory distress, early diagnosis and prompt treatment are necessary.

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