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Prevalence Of Neonatal Respiratory Distress And Its Possible Etiologies In NICU

1. **Dr. Lalit Gulati**: MBBS,MD. Assistant professor, Department of Pediatrics, MVP medical college, Nashik.
E mail: drlalitpeds@gmail.com
2. **Dr. Amit Kumar**: MBBS, DCH,DNB. Senior Resident, LLRM Meerut, UP.
E mail: amit.Aggarwal.dr@gmail.com
3. **Dr. Anil Kumar Parihar**: MBBS, MD. Assistant professor, Department of Pediatrics, Venkateshwara Institute Of Medical Sciences, Gajraula, Amroha ,UP, anil24021987@gmail.com

CORRESPONDING AUTHOR:

Dr. Lalit Gulati: MBBS,MD. Assistant professor, Department of Pediatrics, MVP medical college, Nashik.
E mail: drlalitpeds@gmail.com

Abstract:

Background: Respiratory distress (RD) in neonates is one of the important clinical entities for admission in Neonatal Intensive Care Unit (NICU). The present study was conducted to assess prevalence of neonatal respiratory distress and its possible etiologies in NICU.

Material & Methods: In the present descriptive study all live newborns delivered were observed for respiratory distress over a period of 1 year. After the initial assessment and cardio respiratory management, a history was obtained. Maternal and obstetrical histories were taken and findings suggestive of respiratory distress were also noted. Data was recorded on a predesigned performa. Results were analyzed using SPSS 16.

Results: In the present study total number of live births were 910. Out of all these cases 85 newborns developed respiratory distress. The overall prevalence of respiratory distress was 9.34%. Transient tachypnea of newborn was found to be the commonest cause of respiratory distress (37.64%) followed by Respiratory distress syndrome (21.17%). Birth asphyxia was absent in the newborn.

Conclusion: The present study concluded that the overall prevalence of respiratory distress was 9.34%. Transient tachypnea of newborn was found to be the commonest cause of respiratory distress.

Keywords: Neonatal Respiratory Distress, Transient tachypnea, Birth asphyxia.

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Introduction: Neonatal Respiratory Distress was defined by the Swiss Society of Neonatology in 1972 as a clinical picture based on five signs and symptoms (tachypnea > 60/min, central cyanosis in room air, nasal flaring, retractions and expiratory grunting).[1] Respiratory distress (RD) in neonates is one of the important clinical entities for admission in Neonatal Intensive Care Unit (NICU), seen in approximately 6.7- 12 percent of neonates.[2,3] The prevalence of RD varies with gestational age, 30% among preterm, and 20% among post terms to 4% in term babies.[4] It is defined as presence of the tachypnoea (RR > 60 / min) with subcostal / intercostals retractions, expiratory grunting / groaning. In addition to the above features, presence of nasal flaring, suprasternal retractions, decrease air entry on auscultation of the chest also indicates the presence of respiratory distress. Gasping, chocking or stridor (sign of upper airways obstruction), apnoea or poor respiratory effort or bradycardia, poor perfusion and cyanosis are life threatening signs that require prompt intervention.[5] The etiology of RD in neonates is varied, and respiratory causes include hypoxic ischemic encephalopathy (HIE) transient tachypnea of neonates (TTNB), hyaline membrane disease (HMD), meconium aspiration syndrome (MAS), pneumonia, pneumothorax and diaphragmatic hernia. Non respiratory causes include cardiac failure, septicemia, metabolic disorders, renal failure, renal tubular acidosis, anemia, polycythemia, meningitis/ intracranial bleed and miscellaneous causes. There has been tremendous advancement in the management of RD which has improved the outcome in these neonates, like mechanical ventilation with different modes such as CPAP, ultra high-frequency jet ventilation, liquid ventilation; surfactant replacement therapy; extra corporeal membrane oxygenation and sophisticated equipment for monitoring. Despite these advancement, RD is responsible for 40-50% of all the perinatal deaths.[6] The present study was conducted to assess prevalence of neonatal respiratory distress and its possible etiologies in NICU.

Material & Methods: In the present descriptive study all live newborns delivered were observed for respiratory distress over a period of 1 year. Any newborn showing one or more of the following signs for more than two hours was considered to have respiratory distress. Tachypnoea or respiratory rate of more than 60/minute, retraction or increased chest in-drawing on respirations (subcostal, intercostal, sternal, and suprasternal) and noisy respiration in the form of grunt, stridor or wheeze. After the initial assessment and cardio respiratory management, a history was obtained. Maternal and obstetrical histories were taken and findings suggestive of respiratory distress were also noted. All babies with respiratory distress were treated in the neonatal intensive care unit. All babies with RD received standard care with monitoring of vital signs and oxygen saturation by cardiac monitors. Data was recorded on a predesigned performa. Results were analyzed using SPSS 16. Descriptive statistics were used to analyze results.

Results: In the present study total number of live births was 910. Out of all these cases 85 newborns developed respiratory distress. The overall prevalence of respiratory distress was 9.34%. Transient tachypnea of newborn was found to be the commonest cause of respiratory distress (37.64%) followed by Respiratory distress syndrome (21.17%). Birth asphyxia was absent in the newborn.

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Table 1: Causes of respiratory distress in newborn

Primary diagnosis	N(%)
Transient tachypnea of newborn	32(37.64%)
Respiratory distress syndrome	18(21.17%)
Meconium aspiration syndrome	15(17.64%)
Others (Congenital heart disease / Pierre Robin syndrome/ Congenital diaphragmatic hernia)	12(14.11%)
Congenital pneumonia	8(9.41%)
Birth asphyxia	0(0%)
Total	85(100%)

Discussion: Respiratory distress in neonates can be due to wide variety of conditions including transient tachypnoea of the new-born (TTN), hyaline membrane disease (HMD), meconium aspiration syndrome (MAS), pneumonia, persistent pulmonary hypertension of new-born, and non-respiratory disorders like cardiac, renal, gastrointestinal, neurological diseases and congenital anomalies. Respiratory distress syndrome (RDS), earlier known as Hyaline membrane disease is caused by insufficient pulmonary surfactant in alveoli. Transient tachypnoea of the newborn (TTN) is a clinical syndrome of self-limited tachypnoea associated with delayed clearance of fetal lung fluid.[7]

In the present study total number of live births was 910. Out of all these cases 85 newborns developed respiratory distress. The overall prevalence of respiratory distress was 9.34%. Transient tachypnea of newborn was found to be the commonest cause of respiratory distress (37.64%) followed by Respiratory distress syndrome (21.17%). Birth asphyxia was absent in the newborn.

The prevalence of respiratory distress reported from Iran is 3.4%.[8] Indian studies have reported prevalence between 0.7% and 7%.[2] Respiratory distress was observed in 6120 new-borns (n = 6120) delivered over the study duration of 12 months at this hospital. 19.2 % in preterm, 7 % in post-term and 2.2 % in full term. On the whole common cause of respiratory distress was transient tachypnoea of new-born (TTN) which was 35.3 % while hyaline membrane disease (HMD) was 27 % followed by meconium aspiration syndrome (MAS) 18.4 %, pneumonia 3.3 %, pneumothorax 1.8 % and other congenital anomalies were 14.2 %. In both term and late preterm new-borns, TTN was found to be common, while meconium aspiration syndrome was common among term and post term babies.[7]

Zaman S et al assessed prevalence and etiology of respiratory distress in newborns. All newborns (n=659), delivered at this hospital over the period of 12 months, were observed for respiratory distress. The overall prevalence of respiratory distress (RD) was 4.24%. Prevalence was 19.7% in preterm and 2.3% in full term. Transient tachypnea of newborn(TTN) was found to be the commonest 35.7% cause of Respiratory Distress (RD) followed by Hyaline membrane disease (HMD) 25%, meconium aspiration syndrome (MAS) 17.9%, congenital pneumonia 7.1% and

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other congenital anomalies 14.3%. TTN was found to be common among both term and preterm babies, while hyaline membrane disease was seen among preterm, and me conium aspiration syndrome among term and post term babies.[9]

Conclusion: The present study concluded that the overall prevalence of respiratory distress was 9.34%. Transient tachypnea of newborn was found to be the commonest cause of respiratory distress.

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