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Original Research

A study to determine the incidence of respiratory distress syndrome among neonates in a tertiary care hospital

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***ABSTRACT*:**
Background: Respiratory distress syndrome (RDS) is the most common respiratory disorder of neonates that causes admission of neonates to neonatal intensive care unit (NICU) and cause respiratory failure in neonates. The present study was conducted to determine the incidence of respiratory distress syndrome among neonates in a tertiary care hospital.
Material and methods: This cross-sectional, descriptive analytical study was carried out at the NICU ward in a tertiary care center over a period of 6 months. The sample size was taken 440. Data was retrospectively collected of both infants and their mothers. A trained research team member collected the data. The incidence of RDS in the study was calculated as the number of infants with RDS divided by the total number of infants born at term during the study period. The software package SPSS version 21 was used to perform the statistical analysis. **Results:** In the present study total neonates were 440 in which 56.81.57% were males and 43.18% were females. The gestational age ≥37 weeks was in 64.54% neonates and <37 weeks in 35.45% neonates. The Respiratory distress syndrome was present in 37.5% neonates. The respiratory distress syndrome was present in males (59.39%) more than female neonates. It was was present in 38.78% neonates with gestational age ≥37 weeks and 61.21% neonates with gestational age <37 weeks. It was also found that 63.63% vaginally delivered babies and 36.36% LSCS babies had respiratory distress. **Conclusion:** This study concluded that Respiratory distress syndrome was present in 37.5% neonates. It was present more in male neonates, neonates with gestational age <37 weeks, vaginally delivered babies.
Keywords: extremely preterm, very preterm, moderate preterm, Respiratory distress syndrome.

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INTRODUCTION:
Respiratory distress syndrome (RDS) is a respiratory disorder of neonates that manifests itself immediately after delivery.[1] Respiratory distress syndrome (RDS) caused by surfactant deficiency is described not only in preterm infants but also in term infants born by cesarean section.[2] Respiratory distress is one of the most common reasons for admission in Neonatal Intensive Care Unit (NICU).[3] 15.0% of term babies, 29.0% of late preterm and even a higher proportion of newborns born prior to 34 weeks of gestation develop significant respiratory morbidity.[4] The most common causes of respiratory distress include Transient Tachypnea of the Newborn (TTN), Hyaline Membrane Disease (HMD), Birth asphyxia, Pneumonia and Meconium Aspiration Syndrome (MAS).[5] Risk factors for neonatal respiratory distress include: prematurity, meconium-stained amniotic fluid (MSAF), caesarean section, gestational diabetes, maternal chorioamnionitis and factors such as oligohydramnios or structural lung abnormalities.[6] RD typically manifests in newborns as tachypnea, intercostal retractions, nasal flaring, audible grunting, and cyanosis. The successful transition from fetal to neonatal life requires a series of rapid physiologic changes in the cardiorespiratory systems. These changes result in a redirection of gas exchange from the placenta to the lungs and requires the replacement of alveolar fluid with air and the onset of regular breathing.[7] Before 1960 oxygen therapy was the only treatment for infants born with RDS. Continuous positive airway pressure (CPAP) was designed in the

early 1970's and antenatal corticosteroids were introduced in 1972. After 1990 Surfactant treatment, new ventilators and developed ventilation techniques were the last treatments which dramatically improved the outcomes of infants with RDS.[8] The present study was conducted to determine the incidence of respiratory distress syndrome among neonates in a tertiary care hospital.

MATERIAL AND METHODS:

This cross-sectional, descriptive analytical study was carried out at the NICU ward in a tertiary care center over a period of 6 months. The sample size was taken 440. Ethics approval for the study was obtained from the institutional Ethical Committee. Patients with missing data, congenital malformation were excluded from the study. Cases were all term infants who were admitted to NICU. Data was retrospectively collected of both infants and their mothers. A trained research team member collected the data according to predefined definition of variables agreed upon by research team. The incidence of RDS in our study was calculated as the number of infants with RDS divided by the total number of infants born at term during the study period. The software package SPSS version 21 was used to perform the statistical analysis.

RESULTS:

In the present study total neonates were 440 in which 56.81.57% were males and 43.18% were females. The gestational age ≥37 weeks was in 64.54% neonates and <37 weeks in 35.45% neonates. The Respiratory distress syndrome was present in 37.5% neonates. The respiratory distress syndrome was present in males (59.39%) more than female neonates. It was present in 38.78% neonates with gestational age ≥37 weeks and 61.21% neonates with gestational age <37 weeks. It was also found that 63.63% vaginally delivered babies and 36.36% LSCS babies had respiratory distress.

Table 1: Characteristics of neonates admitted to the NICU

Characteristics	N(%)
Gender	
Male	250(56.81%)
Females	190(43.18%)
Gestational age(week)	
≥37	284(64.54%)
<37	156(35.45%)
Total	440(100%)

Table 2: Incidence of Respiratory distress syndrome among neonates

Incidence of Respiratory distress syndrome	N(%)
Respiratory distress syndrome Present	165(37.5%)
Respiratory distress syndrome Absent	275(62.5%)
Total	440(100%)

Table 3: variables of Respiratory distress syndrome

Variables	N(%)
Gender	
Male	98(59.39%)
Females	67(40.60%)
Gestational age(week)	
≥37	64(38.78%)
<37	101(61.21%)
Delivery mode	
vaginally delivered babies	105(63.63%)
LSCS babies	60(36.36%)
Total	165(100%)

DISCUSSION:

The significant cause of RDS is deficiency of alveolar surfactants due to immaturity of Type II pneumocyte, resulting low compliance of lungs, alveolar surface tension, decreased gas exchange and a demand for high ventilatory pressures. The clinical manifestation of RDS includes apnea, cyanosis, grunting, inspiratory stridor, nasal flaring, poor feeding, tachypnea, retractions in the intercostals, subcostal, or suprasternal spaces. These signs and symptoms are present at birth or shortly afterwards with getting worse over the first 48 - 72 hours of infant's life.[9-13]

In the present study total neonates were 440 in which 56.81.57% were males and 43.18% were females. The gestational age ≥37 weeks was in 64.54% neonates and <37 weeks in 35.45% neonates. The Respiratory distress syndrome was present in 37.5% neonates. The respiratory distress syndrome was present in males (59.39%) more than female neonates. It was was present in 38.78% neonates with gestational age ≥37 weeks and 61.21% neonates with gestational age <37 weeks. It was also found that 63.63% vaginally delivered babies and 36.36% LSCS babies had respiratory distress.

The incidence of respiratory distress was found in studies from Nepal 3.9% to 8.0%.[14]

Higher incidence rates were reported by earlier studies from India (4.2%)[15], Turkey (7%)[16] and a prospective multicenter study in Italy, reported a lower (1.16%) incidence of RDS in full term neonates.[17]

Zhang pointed to 50% as the incidence of RDS in preterm infants born before 30 weeks of gestation.[11]

Khattab also reported Respiratory distress syndrome in 30% - 40% as the cause of admission in the neonatal period.[12]

Caner et al. indicated the incidence of RDS in 40.6% of 613 premature infants who admitted to the neonatal intensive care unit.[18]

Fidanovski also detected higher risk of mortality in infants with lower birth weight and shorter gestational age in 126 premature infants hospitalized at Pediatric Intensive Care Unit.[19]

CONCLUSION:

This study concluded that Respiratory distress syndrome was present in 37.5% neonates. It was

present more in male neonates, neonates with gestational age <37 weeks, vaginally delivered babies.

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