**ORIGINAL ARTICLE**

# Etiological Causes of Respiratory Distress Syndrome in Full Term Neonates Presenting within 24 Hours of Life

MARYYAM NISAR, HINA SABIR, ZUBAIR AHAD, *MUHAMMAD IBRAHIM ISHAQ*

## ABSTRACT

**Aim:** To record the frequency of different etiological causes of respiratory distress syndrome in full term neonates presenting within 24 hours of life.

**Methodology:** A total of 210 neonates born at term of either gender presenting with RDS were include in this trial whereas those neonates with gross congenital malformations like skeletal, visceral, dysmorphism, cleft palate and lip, presenting after 24 hours of birth and having jaundice (yellow skin, eyes and palm) caused by septicemia or bacterial pneumonia were excluded from the study. Antenatal record of mother was assessed for causes of RDS like maternal or fetal infection during pregnancy and maternal diabetes. Mode of delivery was noted and if delivery was conducted through cesarean section then it was noted. Neonates were assessed for presence of birth asphyxia and meconium aspiration syndrome.

**Results:** In our study, mean maternal age was calculated as 27.32+4.09 years, 79(37.62%) neonates were male and 131(62.38%) were females. Etiological causes of respiratory distress syndrome in full term neonates were recorded as 113(53.81%) for infection, 67(31.90%) for caesarean delivery, 27(12.86%) for birth asphyxia and 10(4.76%) had MAS.

**Conclusion:** We concluded that infection was the most prevalent causative etiological factor followed by cesarean delivery and birth asphyxia in full term neonates presenting within 24 hours of life with respiratory distress syndrome.

**Keywords:** Respiratory distress syndrome, newborn, etiological causes, infection, cesarean delivery

## INTRODUCTION

Respiratory distress syndrome (RDS) is common among the causes of pulmonary morbidity and mortality. The underlying mechanisms of RDS include inadequate production of surfactant. Previously it was thought that respiratory distress syndrome primarily occurs in premature infants but due to the use of antenatal steroids and surfactant therapy in delivery room its incidence in preterm neonates is markedly reduced. RDS has now become a more frequent diagnosis in term neonates but mechanisms of RDS in term neonates is different and is still not well established.[1] the incidence of respiratory distress in early neonatal period is upto 7% resulting in significant hospitalizations.[2] Clinical features of RDS includes cyanosis, tachypnea, decreased urine output, grunting, flaring of ala nasi, rapid or shallow breathing pattern. Confirmation of diagnosis can be done by chest X-ray which demonstrates the signs of RDS. ABGs for oxygen content of the blood, blood cultures for infections, echocardiography to look for any heart pathology leading to respiratory distress.[3] The spectrum of causes ranges from perinatal infections 50.4%, cesarean section 27.2%, severe birth asphyxia 9.6%, meconium aspiration syndrome 7.2%.[4]

*Email: mariamwahla84@gmail.com, Cell: 03226046692*

Most causes of RDS in full term infants are temporary and resolve within few days. The mortality rate due to meconium aspiration and congenital pneumonia is about 10% and this pose significant respiratory morbidity. Use of high frequency oscillatory ventilation and inhaled nitric oxide for the treatment of pulmonary hypertension resulted in mortality reduction. The requirement of extracorporeal membrane oxygenation as rescue therapy is very rare.[5] There has been significant change in the guidelines for management of RDS in developed countries. But in resource limited countries like Pakistan these guidelines need to be modified for better outcome.[6] The chances of complications like pneumoni and pneumothorax are more in term neonates with respiratory distress syndrome.[7]

This trials was based on the fact that the clinical features are markedly different from premature RDS and due to its Earlier onset it complicate into persistent pulmonary hypertension and/or multi-organ system failure while local data is lacking to address the cause of RDS in term neonates. Though this study current status of different causes of RDS in term neonates is determined, which may be helpful in taking early preventive and therapeutic measure to avoid RDS in term neonates and in turn reduce the morbidity and mortality burden.

## MATERIAL AND METHODS

The study was conducted during the year 2016. A total of 210 neonates born at term of either gender presenting with RDS were include in this trial whereas those neonates with gross congenital malformations like skeletal, visceral, dysmorphism, cleft palate and lip, presenting after 24 hours of birth and having jaundice (yellow skin, eyes and palm) caused by septicemia or bacterial pneumonia were excluded from the study. Antenatal record of mother was assessed for causes of RDS like maternal or fetal infection during pregnancy and maternal diabetes. Mode of delivery was noted and if delivery was conducted through cesarean section then it was noted. Neonates were assessed for presence of birth asphyxia and meconium aspiration syndrome.

## RESULTS

Maternal age was calculated as 173(82.38%) were between 18-30 years of age while 37(17.62%) were between 31-35 years of age, mean+sd was calculated as 27.32+4.09 years. (Table 1) Gender distribution shows that 79(37.62%) were male and 131(62.38%) were females. (Table 2) Etiological causes of respiratory distress syndrome in full term neonates were recorded as 113(53.81%) for infection, 67(31.90%) for cesarean delivery, 27(12.86%) for birth asphyxia and 10(4.76%) had MAS (Table 3).

Table 1: Maternal Age (n=210)

| Age(in years) | Frequency | % |
|---|---|---|
| 18-30 | 173 | 82.38 |
| 31-35 | 37 | 17.62 |
| Total | 210 | 100 |

Table 2: Gender of Neonates (n=210)

| Gender | Frequency | % |
|---|---|---|
| Male | 79 | 37.62 |
| Female | 131 | 62.38 |
| Total | 210 | 100 |

Table 3: Etiological Causes of Respiratory Distress Syndrome In Full Term Neonates (n=210)

| Etiological causes | Frequency | % |
|---|---|---|
| Infection | 113 | 53.81 |
| Cesarean delivery | 67 | 31.90 |
| Birth asphyxia | 27 | 12.86 |
| MAS | 10 | 4.76 |

## DISCUSSION

In our study, mean maternal age was calculated as 27.32+4.09 years, 79(37.62%) neonates were male and 131(62.38%) were females. Etiological causes of respiratory distress syndrome in full term neonates were recorded as 113(53.81%) for infection, 31.90%(n=67) for cesarean delivery, 27(12.86%) for birth asphyxia and 10(4.76%) had MAS.

Liu J and others determined that the spectrum of causes ranges from perinatal infections 50.4%, cesarean section 27.2%, severe birth asphyxia 9.6%, meconium aspiration syndrome 7.2%[4]. These findings are in agreement with our study.

The commonest causes of respiratory distress in a study[8] were transient tachypnea of newborn (TTN) 57(40.7%) respiratory distress syndrome (RDS) 24 cases (17.2%), birth asphyxia 16 cases (11.4%) and Meconium aspiration syndrome (MAS) 13 cases (9.3%). Cesarean section was the most common predisposing factor associated with the development of TTN and RDS (the most 2 common causes of respiratory distress). The findings of the above study are close to our study.

Sayid M Barkiya and others[9] determined the clinical profile of neonatal RD (NRD) and to find out most common etiology of RD in newborn, they recorded that the 300 newborns admitted in NICU, 102 (34 %) cases were admitted with RD. Of them, 61 babies (60%) were delivered vaginally and 41(40%) by lower segment caesarean section. There were 44(43%) pre-term babies, 56 (55%) term and 2 (2%) post-term neonates who were admitted with RD. The most common causes of NRD were transient tachypnea of newborn (TTN) 44%. The majority of cases clinically presented with tachypnea, flaring of alae nasi, and chest indrawing. The RD resolved on the 4th day in majority of cases.

Abhijit Dutta and others[10] recorded the incidence and etiology of respiratory distress among admitted inborn newborns and recorded that transient tachypnea of the newborn (TTNB) was the commonest (32.23%) cause of respiratory distress followed by pneumonia (24.35%), MAS (13.15%), birth asphyxia (12.5%), RDS (7.9%), cardiovascular (3.3%), and surgical causes (2.63%). The incidence and etiology of respiratory distress is comparable to other studies except, relative high incidence of MAS and birth asphyxia. The incidence of RDS among ELBW was quite high (41.6%).

However, in absence of any local study at the moment addressing the cause of RDS in term neonates, our findings are primary and needs its validation through some-other multi center trials.

## CONCLUSION

We concluded that infection was the most prevalent causative etiological factor followed by cesarean delivery and birth asphyxia in full term neonates presenting within 24 hours of life with respiratory distress syndrome.

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