

# To Study Profile of Respiratory Distress in Neonates in a Tertiary Care Centre

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## Abstract:

**INTRODUCTION :** Respiratory distress constitutes one of the commonest cause of morbidity and mortality in the neonatal period. It is commonly seen within first 48-72 hours of life.

**AIM :** To find out incidence, causes and outcome of respiratory distress in inborn neonates.

**MATERIALS AND METHODS :** All inborn neonates admitted in NICU of CUSMCH, from a period of 6 months (Jan 2021 to June 2021), who developed respiratory distress are included in this study.

**RESULTS :** Of all the inborn deliveries during our study period, 6.2% developed respiratory distress. It constitutes 23.8% of the NICU admissions. TTNB(37.63%) was the most common cause followed by RDS(36.6%), pneumonia(21.3%) and MAS(4.52%). TTNB was most common in term babies. Of the 61 pneumonia cases, sepsis screen was positive in 95.08% cases and blood culture was positive in 25.6% cases. The overall case fatality rate is 18.8%. Mortality is highest in (23.8%) in RDS.

**CONCLUSION :** Respiratory distress is a common cause of NICU admission, TTNB being the commonest cause, followed by RDS. The burden of neonatal pneumonia is high in our NICU.

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## I. Aims And Objectives:

To find out incidence, causes and outcome of respiratory distress in inborn neonates.

## II. Materials And Methods:

- A hospital based prospective study was carried out for a period of 6 months (Jan 21 to June 21) in the Neonatal Unit, Department of Pediatrics, C U Shah Medical College, Surendranagar.
- Patients presenting with tachypnea, retractions, nasal flaring, grunting were admitted in NICU and treated.
- The weight of the baby and the gestational age was recorded.
- Information regarding gender, previous pregnancies, previous abortions if any, mode of delivery, complications during delivery, need of resuscitation, feeding patterns of the newborns were noted.
- Respiratory rate was counted for one minute when the baby was in a quiet state. Respiratory distress was diagnosed clinically by the presence of 2 of the following criteria, namely RR >60/min, chest indrawing (subcostal, intercostals and suprasternal retractions), expiratory grunt and cyanosis at room air.
- They were then assessed by Downe's scoring system and Silvermann Anderson score.
- History of maternal fever >38°C, foul smelling liquor, meconium stained amniotic fluid, prolonged rupture of membrane (PROM)>24 hours were taken.
- Vitals were recorded, Continuous monitoring of oxygen saturation, heart rate was done by pulse oxymeter or multichannel monitor.
- Blood glucose was monitored regularly & Sepsis work up was done.
- Chest X-Ray was done in all babies. X-ray chest was interpreted as per suggested criteria.
- The diagnosis of cause of respiratory distress was based on guidelines recommended by the National Neonatology Forum.
- First line antibiotics were started in the neonates if there were associated risk factors or non-resolution of symptoms within 24 hours.

- CPAP/NIMV was given for score >4 and mechanical ventilation (SIMV- synchronized Intermittent Mechanical Ventilation) for score > 6.

**INCLUSION CRITERIA:** All inborn newborn babies admitted to NICU of CUSMCH, who developed respiratory symptoms were included in the study.

**EXCLUSION CRITERIA:** Babies with multiple congenital malformations were excluded from the study.

### III. Introduction:

- Respiratory distress constitutes one of the commonest cause of morbidity and mortality in the neonatal period. It is more commonly encountered within the first 48-72 hours of life. In developed countries the incidence of respiratory distress ranges from 2.2% to 7.6%, whereas in India it ranges from 0.7% to 8.3%
- The spectrum of respiratory distress in neonates includes transient tachypnea of newborn (TTNB), pneumonia, Respiratory distress syndrome (RDS), meconium aspiration syndrome (MAS), sepsis, congenital heart disease(CHD), some surgical pathology of the lungs, esophagus and diaphragm and other miscellaneous causes.
- According to National Neonatal and Perinatal database, Pneumonia constitutes 2.5% of neonatal deaths.

### IV. Results:

- ❖ During our study period of 6 months 240 were admitted, out of which 120 newborns (7.2%) developed features of respiratory distress.
- ❖ It constituted 23.8% of all SNCU admission (1205) during this period. Among these, there were 70 (58.3%) males and 50 (41.6%) were females.
- ❖ Transient Tachypnea of the Newborn (TTNB) was the most common cause (37.63%) of respiratory distress followed by Respiratory Distress Syndrome (RAS) (36.6%), pneumonia & sepsis (21.3%), and Meconium Aspiration Syndrome (MAS) (4.52%).
- ❖ TTNB was more in term babies(55.6%), RDS among preterm babies(94.4%) and MAS was found exclusively in the term babies.
- ❖ 171 babies (59.6%) responded to only headbox oxygen, 50 babies (17.4%) required CPAP and 66 babies (23%) babies had to be managed by mechanical ventilation (SIMV).
- ❖ Of the 61 Pneumonia cases, sepsis screen was positive in 95.08% cases and blood culture was positive in 25.6% cases. The most common organism was CONS which was found in 4 cases(6.55%), followed by acinetobacter in 4 cases(6.55%) and klebsiella in 7 cases(11.5%).
- ❖ In the pneumonia cases, predisposing factors like PROM was detected in 25.6%, maternal fever in 16.6% and foul smelling liquor in 11.1%.
- ❖ The overall case fatality rate is 18.8%.
- ❖ Mortality is highest(23.8%) in RDS.
- ❖ The mortality in neonates due to pneumonia was found to be 21.3%

Etiology and incidence of Respiratory Distress		
Causes	No of cases (n)	Percentage (%)
TTNB	73	37.63
RDS	24	36.6
Pneumonia/Sepsis	21	21.31
MAS	3	4.52

Gestational age wise distribution of cases.					
Cause	<37 wks		>37wks		total
	n	%	n	%	
TTNB	14	19.4	58	80.5	72
RDS	18	75	6	25	24
Pneumonia	14	66.6	7	33.3	21
MAS	0	0	3	100	3

Blood culture in pneumonia.		
Blood Culture	n	(%)
Sterile	46	( 75.4)
Positive	15	(24.6)
Total	61	

Cause wise mortality				
Causes	Survived	died	Case fatality rate (%)	total
TTNB	72	0	0	72
Pneumonia	15	6	28.5	21
MAS	2	1	33.3	3
RDS	16	8	33.3	24

Spectrum of organisms in blood culture positive Pneumonia cases.	
Organism	N (%)
CoNS	4 (6.55)
<i>Acinetobacter</i>	4 (6.55)
<i>Klebsiella</i>	7 (11.5)
Total	15 (24.6)

## V. Discussion:

❖ Newborn respiratory distress presents a diagnostic and management challenge. Newborns with respiratory distress commonly exhibit tachypnea with a respiratory rate of more than 60 respirations/minute. They may present with grunting, retractions, nasal flaring, and cyanosis. Common causes include transient tachypnea of newborn, respiratory distress syndrome, meconium aspiration syndrome, pneumonia, sepsis, pneumothorax, persistent pulmonary hypertension of newborn, and delayed transition.

❖ Blood cultures, serial complete blood counts, C-reactive protein, chest xray are useful for the evaluation of sepsis.

❖ Most neonates with respiratory distress can be treated with respiratory support and noninvasive methods. Oxygen can be provided via bag/mask, nasal cannula, oxygen hood and nasal continuous positive airway pressure. Ventilator support may be used in more severe cases. Surfactant is increasingly used for respiratory distress syndrome.

❖ Tachypnea is the most common presentation. The most common causes include TTN, RDS, MAS, pneumonia and sepsis. Rare causes include choanal atresia, diaphragmatic hernia, tracheoesophageal fistula, congenital heart disease, and hematological disorders.

❖ Rarely, newborns with RDS develop chronic lung disease or bronchopulmonary dysplasia. Newborns with bronchopulmonary dysplasia may have nutritional failure, have neurodevelopmental delay and require oxygen for a longer period of time with higher hospital readmission rates.

❖ While treatment modalities, including antenatal corticosteroids, surfactants, and advanced respiratory care of the newborn have improved the outcome for the patients affected by respiratory distress syndrome, it continues to be the leading cause of morbidity and mortality in preterm infant.

#### **VI. Conclusion:**

❖ Respiratory distress constituted 23.8% of all SNCU admission. The burden of neonatal pneumonia is high in our NICU, being the third important cause of respiratory distress.

❖ The mortality due to pneumonia was found to be 21.3%. Presence of maternal risk factors like PROM, fever and foul smelling liquor predispose to neonatal pneumonia and hence needs early intervention.

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