CLINICO-AETIOLOGICAL EVALUATION OF RESPIRATORY DISTRESS IN NEWBORN AND ITS IMMEDIATE OUTCOME ADMITTED IN A TERTIARY CARE TEACHING HOSPITAL, SOUTH INDIA

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ABSTRACT

BACKGROUND

The present study is aimed to identify the various aetiological factors responsible for respiratory distress in newborn, their clinical presentation, appropriate management and also to study the immediate outcome.

MATERIALS AND METHODS

It is a prospective, longitudinal, hospital-based observational study conducted in NICU of Government General Hospital, Guntur Medical College, Guntur from February 2014 to July 2015 over a period of 1.5 years after taking the informed consent and Institutional Ethical Committee approval. During this period, 200 newborns with respiratory distress within 72 hours of birth were included in this study; regardless of gestational age, treatment intervention was done. Data collected in a proforma and analysed using chi square test in a phased manner.

RESULTS

Out of 200 cases; RDS 30%, MAS 27%, TTN 12%, Birth asphyxia 6%, CHDs 7.5%, Congenital pneumonias 6%, rare causes being PPHN 1%, Pneumothorax, CCAM, IEM 0.5% of each, surgical conditions like TEF 4% and CDH 2% were identified in our study as aetiological factors. Maternal risk factors like primigravida > 4 PV examinations, MSL, prolonged labour with BA were associated with severe RD in newborns; 71% of newborn with RD had abnormal chest x-ray; 75% of newborns with severe RD requiring O2 therapy (70% required O2 for > 24 hrs.), 25% required ventilator support, 10% cases required CPAP, 5% cases required surgical intervention immediately after birth. Early recognition and timely intervention of surgical causes of RD like CDH, TEF with good postoperative care had better outcome. Overall death rate was 10% and RDS, MAS being the most common causes contributed to 30% and 20% deaths respectively. CHD, CDH and TEF each contributed 10%, congenital pneumonia, CCAM, PPHN, Perinatal asphyxia contributed 5% each.

CONCLUSION

Most cases of Respiratory Distress (RD) was due to respiratory distress syndrome in preterm followed by meconium aspiration and birth asphyxia in term babies along with surgical causes. Various maternal factors also contribute to much more respiratory distress, morbidity and mortality of newborn. So proper antenatal care to prevent preterm deliveries, encouraging institutional deliveries and perinatal care along with early recognition of the causes of respiratory distress and immediate referral by healthcare persons to a tertiary care centre will decrease the mortality and morbidity like in developed nations.

KEYWORDS

Respiratory Distress, Aetiological Factors, Maternal Causes, Clinical Evaluation, Immediate Outcome, Newborn.

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BACKGROUND

Respiratory Distress (RD) is the most common cause for admission in neonatal intensive care unit. Clinical presentation of the RD in neonates include tachypnoea, retractions of the chest, nasal flaring, grunting and cyanosis. RD seen in 67% of newborn with highest incidence in preterm followed by post-term and term.[1] It has been estimated that 40% to 50% of all perinatal deaths occur due to RD.[2]

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Respiratory distress is a symptom complex secondary to a large number of aetiological factors, which may be due to respiratory and non-respiratory causes like Respiratory Distress Syndrome (RDS), pneumonia, Meconium Aspiration Syndrome (MAS), Transient Tachypnoea of Newborn (TTN), pneumothorax, congenital heart disease, hypoxic ischaemic encephalopathy due to Birth Asphyxia (BA), aspiration of milk, maternal blood and pulmonary haemorrhage. Uncommon causes are pleural effusion, neuromuscular disorders, metabolic acidosis, congenital malformations (Congenital Diaphragmatic Hernia [CDH], Tracheo-oesophageal Fistula [TEF], Congenital Cystic Adenomatoid Malformation [CCAM], lobar emphysema, pulmonary hypoplasia.[1]

Newborn has limited capacity to express clinical manifestations of a disease process. Identical and often stereotyped responses are seen from a variety of disorders. Therefore, it is crucial to make an aetiological diagnosis of respiratory distress in newborn.[3]

Though majority of respiratory distress cases admitted in neonatal units are preterm due to RDS,[4,5] a significant number of term neonates are also admitted for management of RD due to TTN, MAS, etc.[6,7,8]

Early recognition and appropriate therapy of the underlying aetiological conditions leading to RD in newborn has impressive results. Ongoing efforts aiming at prevention of preterm birth, early recognition of foetal distress and maternal risk factors causing RD will lead to further improvement in neonatal outcome.[9]

The present study is aimed to study the various aetiological factors responsible for RD, their clinical presentation, appropriate management and to study the immediate outcome of newborns admitted to NICU, attached to Paediatric Department, Govt. General Hospital, Guntur Medical College, Guntur, south India, which is a tertiary care teaching hospital with level 3 NICU serving the needs of newborns referred from the neighbouring 5 to 6 districts of central Andhra Pradesh.

MATERIALS AND METHODS

Our study is a prospective, longitudinal, hospital-based observational study conducted at NICU of Govt. General Hospital, Guntur Medical College, Guntur from February 2014 to July 2015 over a period of 1.5 years after taking the informed consent and Institutional Ethical Committee approval.

During this period, 200 newborns presented with RD within 72 hours of birth were included in this study regardless of gestational age, treatment intervention. Exclusion criteria being onset of RD after 72 hours of life. Data of all newborns with RD was collected in a fixed proforma. Severity of RD was graded by using Silverman Anderson score[10] and Downes' score.[11] Chest radiograph was taken for all babies and other investigations like CT chest, 2D Echo and blood culture were done as required. Treatment details like respiratory support (Oxygen therapy, CPAP, Mechanical ventilation), surfactant and surgical interventions performed were documented.

The present study was analysed in phased manner; in Phase-1, data collection by using proforma sheet. In Phase-2, computer-based data analysis was carried out using Chi square test. In Phase-3, report of entire research process including analysis of results and discussion was compiled.

RESULTS

Out of 200 cases of RD in newborns, various observations were made and is given in the tables to follow.

Aetiology	Frequency	%
Respiratory Causes		
1. RDS	60	30%
2. MAS	54	27%
3. TTNB	24	12%
4. Congenital Pneumonia	12	6%
5. Pneumothorax	1	0.5%
6. CCAM	1	0.5%
Cardiac Causes		
1. CHDs	15	7.5%
2. PPHN	2	1%
CNS Causes		
1. Perinatal Asphyxia	12	6%
2. IVH	2	1%
Surgical Causes		
1. TEF	8	4%
2. CDH	4	2%
Others		
1. Sepsis	4	2%
2. IEM	1	0.5%
Total	**200**	**100%**

Table 1. Aetiological Factors of RD

Grading	Score	Frequency	%
Mild	< 3	15	7.5%
Moderate	3 - 7	45	22.5%
Severe	> 7	140	70%
Total		**200**	**100%**

Table 2. Grading of RD (Downes' Score)

Aetiology	Frequency	Severity	%
Respiratory Causes			
1. Pneumothorax	1	1	100%
2. CCAM	1	1	100%
3. RDS	60	48	80%
4. MAS	54	38	70%
5. Congenital Pneumonia	12	8	66%
6. TTNB	24	6	25%
Cardiac Causes			
1. PPHN	2	2	100%
2. CHDs	15	13	86%
CNS Causes			
1. Perinatal Asphyxia	12	10	83%
2. IVH	2	1	50%
Surgical Causes			
1. CDH	4	4	100%
2. TEF	8	6	75%
Others			
1. Sepsis	4	2	50%
2. IEM	1	0	0%

Table 3. Severe RD in various Causes

Onset	Frequency	Severe Distress	%
Birth	142	103	72.5%
0 - 6 Hours	38	25	65.7%
> 6 Hours	20	12	60%
Total	**200**	**140**	**70%**

Table 4. Onset vs Severity of RD

Duration	Frequency	Severe Distress	%
< 24 Hours	88	44	50%
> 24 Hours	112	96	85.7%

Table 5. Duration vs Severity of RD

Age of Mother	Frequency	Severe Distress	%
< 21	58	38	65.5%
22 - 30	130	94	72.3%
> 30	12	8	66.6%
Total	**200**	**140**	**70%**

Table 6. Maternal Age vs Severity of RD

Parity	Frequency	Severe Distress	%
Primigravida	96	80	83.3%
Gravida 2 - 3	60	42	70%
Multigravida	44	18	40.9%
Total	**200**	**140**	**70%**

Table 7. Parity vs Severity of RD

PV Examination	Frequency	Severe Distress	%
< 4	42	18	42.8%
> 4	158	122	77.2%
Total	**200**	**140**	**70%**

Table 8. PV Examination vs Severity of RD

Liquor	Frequency	Severe Distress	%
Clear	54	24	44.4%
Meconium Stained	146	116	79.4%

Table 9. Liquor vs Severity of RD

Mode of Delivery	Frequency	Severe Distress	%
Caesarean	66	28	42.4%
NVD	134	112	83.5%
Total	**200**	**140**	**70%**

Table 10. Mode of Delivery vs Severity of RD

Weight in Kg	Frequency	Severe Distress	%
< 2.5 kg	107	84	78.5%
> 2.5 kg	92	56	60.8%
Total	**200**	**140**	**70%**

Table 11. Birth Weight vs Severity of RD

Gestation	Frequency	Severe Distress	%
Term	137	90	65.6%
Preterm	63	50	79.3%

Table 12. Gestation vs Severity of RD

Gender	Frequency	Severe Distress	%
Male	119	82	68.9%
Female	81	58	71.6%

Table 13. Gender vs Severity of RD

Aetiology	No. of Cases	Abnormal X-Rays	%
Respiratory Causes			
1. Pneumothorax	1	1	100%
2. CCAM	1	1	100%
3. Congenital Pneumonia	12	12	100%
3. MAS	54	50	92.5%
4. RDS	60	48	80%
5. TTNB	24	4	16.6%
Cardiac Causes			
1. CHDs	15	14	93.3%
2. PPHN	2	1	50%
CNS Causes			
1. Perinatal Asphyxia	12	0	0%
2. IVH	2	0	0%
Surgical Causes			
1. CDH	4	4	100%
2. TEF	8	8	100%
Others			
1. Sepsis	4	0	0%
2. IEM	1	0	0%
Total	**200**	**143**	**71.5%**

Table 14. Chest X-Ray vs Severity of RD

Aetiology	Cases	No. of Days on O_2					
Respiratory Causes		0	**1**	**2**	**3**	**4**	**≥ 5**
1. Pneumothorax	1	-	-	-	-	-	1
2. CCAM	1	-	-	-	-	-	1
3. Congenital Pneumonia	12	-	-	1	3	4	4
4. MAS	54	10	26	18	-	-	-
5. RDS	60	-	1	3	14	20	22
6. TTNB	24	4	10	4	6	-	-
Cardiac Causes							
1. CHDs	15	-	-	-	1	2	12
2. PPHN	2	-	-	-	-	1	1
CNS Causes							
1. Perinatal Asphyxia	12	-	-	2	4	4	2
2. IVH	2	-	-	-	1	1	-
Surgical Causes							
1. CDH	4	-	-	-	-	-	4
2. TEF	8	-	-	-	-	3	5
Others							
1. Sepsis	4	-	-	1	2	1	-
2. IEM	1	-	-	1	-	-	-
Total	**200**	**143**					

Table 15. Duration of O_2 Therapy vs RD

Aetiology	Frequency	Surgical	CPAP	Ventilator	Surfactant
Respiratory Causes					
1. Pneumothorax	1	-	-	1	-
2. CCAM	1	-	-	1	-
3. Congenital Pneumonia	12	-	-	1	-
4. MAS	54	-	2	14	-
5. RDS	60	-	16	12	4
6. TTNB	24	-	-	-	-
Cardiac Causes					
1. CHDs	15	-	-	6	-
2. PPHN	2	-	-	1	-
CNS Causes					
1. Perinatal Asphyxia	12	-	-	2	-
2. IVH	2	-	-	1	-
Surgical Causes					
1. CDH	4	3	-	4	-
2. TEF	8	6	-	8	-
Others					
1. Sepsis	4	-	-	-	-
2. IEM	1	-	-	-	-

Table 16. Treatment Intervention

Aetiology	Frequency	Deaths	%
Respiratory Causes			
1. RDS	60	6	10%
2. MAS	54	4	7.4%
3. TTNB	24	0	0%
4. Congenital Pneumonia	12	1	8.3%
5. Pneumothorax	1	0	0%
6. CCAM	1	1	100%
Cardiac Causes			
1. CHDs	15	2	13.3%
2. PPHN	2	1	50%
CNS Causes			
1. Perinatal Asphyxia	12	1	8.3%
2. IVH	2	0	0%
Surgical Causes			
1. TEF	8	2	25%
2. CDH	4	2	50%
Others			
1. Sepsis	4	0	0%
2. IEM	1	0	0%
Total	**200**	**20**	**10%**

Table 17. Mortality vs Diagnosis

DISCUSSION

Early diagnosis of newborn respiratory distress is very important for proper management and good clinical outcome. This study, made an attempt to identify the cause of respiratory distress in the early stages in the newborn period based on clinical assessment, risk factor association, abnormal radiological findings and the requirement for various modalities of respiratory support [Oxygen, CPAP, ventilator] and duration for which respiratory support was given. It also tried to assess the various factors influencing the immediate outcome of RD due to various disorders of respiratory system and non-respiratory disorders in newborn babies admitted in neonatal unit of a tertiary care hospital with availability of super speciality services to handle the non-respiratory causes and surgical causes of RD in the newborn.

In the present study, out of 200 neonates identified with respiratory distress, 76% were of respiratory origin and 24% were of non-respiratory origin. The commonest cause of respiratory distress due to respiratory origin was RDS (30%) followed by MAS (27%) and TTN (12%). Other causes of RD were congenital heart diseases (7.5%), 6% each of perinatal asphyxia and congenital pneumonia, 4% of TEF, 2% each of sepsis and congenital diaphragmatic hernia, 1% each of PPHN and IVH and 0.5% each of pneumothorax, CCAM and inborn errors of metabolism.

Similar results were seen in a study done by Alok Kumar et al, in which RDS was found to be the commonest (42.7%) cause of respiratory distress followed by TTNB (17.0%), MAS (10.7%), Sepsis (9.3%) and Birth asphyxia (3.3%).[12]

Similarly, Nagendra K et al also showed that the commonest cause for respiratory distress in neonates was RDS (18.8%) followed by TTNB (14%) and MAS (12.5%).[13]

However, in the study done by Guyon G et al, commonest cause of distress in newborns was TTN (72%) followed by MAS (61%) and RDS (38%).[14] This could be due to enrolment of relatively more cases of preterms and less number of babies delivered by caesarean section resulting in less number of babies with RD due to TTN in our study.

As per Downes' score, majority of newborns (70%) had severe respiratory distress, 22.5% had moderate and 7.5% mild RD. More babies with onset of respiratory distress at birth 72.5% (103 out of 142) developed severe respiratory distress compared to 65.7% (25 out of 38) of newborns with onset of respiratory distress within 0 - 6 hours of birth and 60% (12 out of 20) with onset of respiratory distress after 6 hours of birth. Similar results were observed in the study done by Derek C et al, where neonates (34 out of 71) with the duration of respiratory distress of more than 24 hours developed severe respiratory distress.(15)

Maternal Risk Factors-

Maternal Age-

In the present study, 72.3% (94 out of 130) of neonates born to mothers with maternal age of 22 - 30 years developed severe respiratory distress compared to 66.6% (8 out of 12) and 65.5% (38 out of 58) neonates born to mothers of age more than 30 years and less than 21 years respectively. However, in the study done by C. Dani et al,[16] it was observed that mothers > 32 years of age were at a higher risk of delivering babies with respiratory distress. In the study done by Alwyn Smith et al[17] also showed higher maternal age was identified as a risk factor for neonatal respiratory distress. Most of the families in our study belonged to low socioeconomic status and they got married at earlier age resulting in pregnancies at earlier age. This could be the reason of more number of RD cases in babies with maternal age of 20 - 30 years in our study.

Parity

In the present study, 83.3% (80 out of 96) of newborns born to primigravida developed severe respiratory distress compared to 70% (42 out of 60) and 40.9% (18 out of 44) of neonates born to 2nd - 3rd gravid and multigravida respectively. Similar results were observed in the study done by C. Dani et al,[16] where it was seen that the incidence of respiratory distress was more in the first pregnancy. However, N. B. Mathur et al[18] showed that multigravida was a risk factor for developing respiratory distress in newborns. M. Lureti et al[19] however showed that there is no significant association between multiparity and the attainment of respiratory distress. In the present study, prolonged labour may be the reason for more number of RD cases in neonates born to primigravida mothers.

Pervaginal Examinations

In the present study, 77.2% (122 out of 158) of neonates born to mothers who had more than 4 pervaginal examinations (PV) had severe respiratory distress compared to 42.8% (18 out of 42) born to mothers with less than 4 PV examinations. C. Dani and G. Bertini et al[16] had shown that more than 5 PV examinations was significantly associated with respiratory distress. Similar results were observed in the study done by Kwang Sun Lee et al,[20] where more than 5 PV examinations done was more associated with respiratory distress.

Liquor

In the present study, 79.4% of newborns (116 out of 146) born to mothers with meconium stained liquor developed severe respiratory distress compared to 44.4% of the newborns (24 out of 54) born to mother with clear liquor. Similar observations were observed in the study done by Michal Rygal et al,[21] where babies with history of meconium stained liquor had more chances of developing respiratory distress [58.8% Vs 21.14%].

Mode of Delivery

In the present study, 83.5% (112 out of 134) of neonates born out of normal vaginal delivery developed severe RD compared to 42.4% (28 out of 66) of neonates born out of caesarean section. However, in the studies done by C. Dani et al,[16] E. J. Geller et al[22] and Jean-Bernard Gouyon et al,[23] it was noticed that babies delivered by caesarean section had more chances of neonatal respiratory distress than those born by normal vaginal delivery. Prolonged labour resulting in birth asphyxia and meconium aspiration in our study population could have contributed to more cases of RD in babies born by vaginal delivery than in those delivered by LSCS.

Foetal Risk Factors

Birth Weight

In the present study, 78.5% (84 out of 107) of newborns with birth weight less than 2.5 kg developed severe respiratory distress compared to 60.8% (56 out of 92) of newborns with birth weight more than 2.5 kg. In the study done by M. Lureti et al,[24] it was seen that the risk of neonatal respiratory distress markedly increased with decreasing birth weight compared to babies weighing more than 2500 g at birth. In the study done by Herbert C. Miller et al,[25] it was seen that respiratory distress was more common in babies weighing between 1000 gms - 1500 gms and the risk of respiratory distress reduced with increase in birth weight.

Gestation

In the present study, 79.3% (50 out of 63) of preterm babies developed severe RD compared to 65.6% (90 out of 137) of term babies. Similar findings were observed in a study done by Kwang Sun Lee et al,[26] where it was seen that preterm babies had a significantly higher risk of developing respiratory distress when compared to term babies. C. Dani et al[16] and M. Lureti et al[19] also observed that preterm babies were more often associated with respiratory distress when compared to term babies.

Newborn Sex

In the present study, 71.8% female babies (58 out of 81) developed severe respiratory distress compared to 68.9% (82 out of 119) in male babies. M. Lureti et al[19] showed that the frequency of neonatal respiratory distress was higher in male babies than in females. Similarly, Herbert C. Miller et al[23] showed that the incidence of severe respiratory distress was almost three times higher among males than females. However, in the study done by C. Dani et al[16] it was observed that there is no significant association with respiratory distress and the sex of the baby. Similar findings were observed by Nagendra K et al,[13] who also concluded that there is no significant difference in neonatal respiratory distress in male and female neonates.

Abnormal Chest X-Rays

71.5% (143 out of 200) of newborns with respiratory distress had abnormal chest x-rays signifying the usefulness of chest x-ray in the early diagnosis of cause of respiratory distress in the newborn period. In our study 93.3% (14 out of 15) of congenital heart diseases, 92.5% (50 out of 54) of MAS, 80% (48 out of 60) of RDS, 50% (1 out of 2) of PPHN and 16.6% (4 out of 24) of TTN had abnormal chest x-ray findings. Chest x-ray was abnormal in all babies with congenital pneumonia (12 out of 12), pneumothorax (1 out of 1), CCAM (1 out of 1), CDH (4 out of 4), TEF (8 out of 8). Several studies[24,25,26] reiterated the usefulness of bedside chest x-ray in early identification of cause of RD in neonates, thereby improving the outcome of severe RD in neonatal unit.

Duration of O_2 Therapy Vs Respiratory Distress

In the present study, majority of newborns 74.5% (149 out of 200) required oxygen therapy for more than 24 hours (15% for 2 days, 15.5% for 3 days, 18% for 4 days, 26% for 5 days) compared to 18.5% (37 out of 200) requiring oxygen therapy for less than 24 hours. Bhutta Z. A. et al studied 200 babies, out of which 81 were diagnosed with respiratory distress. It was seen that all these babies required supplemental oxygen while in NICU.[27] In the present study, majority of babies with RDS (44 out of 54 babies, 81.4%) and MAS (59 out of 60 babies, 98.3%) required oxygen for more than 24 hours in comparison to 10 out of 24 (41.6%) cases of TTN. As babies requiring prolonged oxygen therapy are at high risk of developing worsening respiratory distress requiring respiratory support with CPAP and mechanical ventilation, early referral of such babies to advanced neonatal intensive care units improves the immediate outcome in neonates with severe RD.

Treatment Intervention

Several studies[28,29,30] showed that PEEP in mechanically ventilated patients reversed airway closure and collapse of terminal alveoli and resulted in increased oxygenation and ventilation and improved the survival rates of ventilated infants with RDS from 23% to 70%. However, the increased pressures used to ventilate infants caused the morbidities of pneumothorax, pneumomediastinum and pneumopericardium. In the present study, out of 60 RDS cases 4 babies were given surfactant, 16 babies were on CPAP and 12 babies required mechanical ventilation. Among 4 babies given surfactant, 2 babies were given CPAP support and 2 babies required ventilator support; 3 babies recovered well and 1 baby on ventilator expired. The benefits of surfactant and CPAP using INSURE technique in preterm babies with RDS are proven in most of the studies. This modality is the standard of care in preterm babies with RDS in many neonatal centres across the world with improved survival and less chances of ventilator-induced lung damage. As the infrastructure for respiratory support with CPAP and mechanical ventilation does not meet the load of neonates admitted with RD in our centre, surfactant and respiratory support with CPAP could not be given to all preterm neonates with RDS in our study. Ventilator management of the neonate with MAS is challenging because of the complicated pulmonary pathophysiology resulting from areas of both atelectasis and hyperinflation in association with ventilation-perfusion mismatch and airway compromise.[31]

Approximately, 40% of babies with MAS require mechanical ventilation and additional 10% require CPAP. Out of 54 cases of MAS in the present study 2 babies needed CPAP and 14 babies were ventilated, among which 4 babies expired. Thus, 25.9% of MAS required ventilation. This was similar to the study conducted by Velaphi et al, where one-third of infants with MAS required intubation and mechanical ventilation.[32] RD due to cardiac causes was the most common cause of RD due to non-respiratory disorders in our study with 13% mortality. Out of 15 cases of CHD, 6 cases (40%) required ventilation. Of these, 2 babies expired (13% mortality). In addition to above ventilated 65 babies, 2 babies of perinatal asphyxia and 1 each of congenital pneumonia, pneumothorax, CCAM, PPHN and IVH were ventilated as all of them presented with severe RD and could not maintain saturations with oxygen therapy alone. Being a tertiary care centre with facilities for super speciality services, neonates with RD due to congenital defects requiring surgical correction were also admitted. Out of 4 CDH cases admitted, surgical intervention was done in 3 cases and were kept on ventilator post-operatively. Among these, 2 babies recovered and 1 baby expired; 1 baby with CDH was not operated as baby had severe distress and expired in spite of giving ventilatory support soon after admission (50% mortality - 2 out of 4 cases). In a large study done by Upadhyaya et al,[33] out of 92 cases of CDH mortality was 44.7%. In another study conducted by Jain et al,[34] the overall survival rate was about 40% and lower in those with distress at birth. Out of 8 cases of TEF with RD admitted, 6 babies were operated, kept on ventilator post-operatively and all of them recovered well; 2 babies with TEF expired. They were not operated, as they had severe distress and kept on ventilator immediately for stabilising the baby.

Mortality

In the present study, out of 200 neonates with respiratory distress, mortality was 10% (20 out of 200). Majority of deaths were due to RDS and MAS accounting for 30% (6 out of 20 deaths) and 20% (4 out of 20 deaths) respectively. CHD, CDH and TEF each accounted for 10% mortality (2 out of 20 deaths) and 5% mortality each (1 out of 20 deaths) was due to congenital pneumonia, CCAM, PPHN and perinatal asphyxia. These findings were similar to studies conducted by others.[35,36] In the present study, more preterm babies with RD due to RDS were admitted. This would explain RDS as the commonest cause of mortality in the present study.

CONCLUSION

Respiratory Distress in newborn is a commonest clinical problem to get admitted in NICU. Most cases of RD was due to respiratory distress syndrome in preterms. So immediate admission to NICU with adequate management facilities along with preventive measures of preterm deliveries to be taken for better newborn survival. Meconium aspiration syndrome and birth asphyxia are the leading causes of RD in term babies, which can be managed by encouraging institutional deliveries in a hygienic environment with appropriate perinatal monitoring. Surgical causes of RD in newborn can be managed by referring early to tertiary care centres with appropriate transport facilities. With further technological advances, increased neonatal specialisation, adequate infrastructure, early referral with early identification of various causes of respiratory distress and other neonatal problems will decrease the neonatal mortality in India as evidenced from the developed world.

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