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Paediatrics Medicine

OUTCOMES OF NEONATES BORN TO MOTHER WITH PREMATURE MEMBRANE RUPTURE AT TERTIARY HOSPITAL, AMBALA.

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ABSTRACT **Aims and Objectives:** To find out all the outcomes in neonates born to mother with premature membrane rupture (PROM or PPROM) of >18 hrs duration. **Methods:** This descriptive study was conducted in Department of Pediatrics, at Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala over a period of 18 months. Total 58 neonates born to mother with PROM of more than 18 hours were evaluated in this study. **Results:** Perinatal morbidity was seen in 50% of cases. Neonatal jaundice was the commonest cause for perinatal morbidity noticed in 37.93% of cases followed by respiratory distress/TTN, Thrombocytopenia, CRP positive sepsis, Birth asphyxia, Apnoea, RDS and Culture positive sepsis (27.58%, 18.96%, 18.96%, 10.34%, 10.34%, 8.62% and 8.62% respectively). Perinatal mortality observed was 1.72% (1 out of 58). As the period of gestation increases the duration of latency period decreases and incidence of perinatal morbidities also decreases. **Conclusion:**Pregnancies complicated by PROM are significantly at higher risk of developing perinatal morbidities and mortality. These morbidities are greatly influenced by the duration of the latency period and period of gestation.

KEYWORDS : Perinatal morbidity, Perinatal mortality, Premature membrane rupture.

INTRODUCTION:

According to the World Health Organization, approximately four million neonates die annually with a global neonatal mortality rate of 23/1,000 live births. About a million of these deaths are attributable to neonatal infection. The incidence of neonatal sepsis according to the data from National Neonatal Perinatal Data base (NNPD 2002-03) is 30 per 1000 live births. It was reported as high as three times this number in developing countries compared to developed countries. Prolonged rupture of membrane (PROM), defined as rupture of membrane lasting more than 18 hours before labor, is found in approximately 8%-10% of all pregnancies. PROM is an important risk factor for both early onset neonatal sepsis (EONS) and preterm births[1].

PROM is significant not only in perinatal morbidity and mortality, but also in the long term neonatal complications and sequelae in survived neonates. Improved prenatal care and antenatal antimicrobial treatment of women with a history of PROM have significantly improved neonatal outcome[1].

AIMS AND OBJECTIVES

To find out all the outcomes in neonates born to mother with premature membrane rupture (PROM or PPROM) of >18 hrs duration.

MATERIALS AND METHODS

The Descriptive study was conducted on inborn neonates born to mother having history of premature membrane rupture of >18 hours' duration, in the Neonatal-ICU, Department of Pediatrics, Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, Ambala. Total 50 neonates of either sex born to mother with PROM or PPROM of >18 hours were selected for study. In this study, inclusion criteria were all neonates born to mothers with premature prelabor membrane rupture (PROM) and preterm premature membranes rupture (PPROM) of > 18 hours duration at MMIMSR, Mullana, Ambala,were selected taking into consideration and exclusion criteria are Out born neonates, Mother with Antepartum hemorrhage, Toxemia of pregnancy , Co-morbidities in the mother other than infection, Neonates with major congenital anomalies, Mothers with PROM of < 18 hours duration and Rh/ABO hemolytic disease.

DATA ANALYSIS-

Analysis of data was done by, descriptive statistics, through absolute and relative frequencies and statistical significance test, to assess the association between the selected variables. It was considered as significant at a value of p 0.05 and confidence interval of 95%.

RESULTS:

Table-1 Baseline variables

variables	Category	Number of patients	Percentage
1. Gender	Male	33	56.89
	Female	25	43.11
	Total	58	100
2. Gestational age	Appropriate for gestational age	35	60.34
	Small for gestational age	23	39.66
	Large for gestational age	0	0
	Total	58	100
3.Parity of mother	Primigravida	29	50
	Multigravida	29	50
	Total	58	100
Assessment as per term status	Term birth	28	48.27
	Late Pre-Term birth	22	37.93
	Very Pre-Term birth	8	13.79
	Extremely Pre-Term birth	0	0
	Total	58	100
Mode of delivery	Normal vaginal delivery	34	58.62
	LS caesarean section	24	41.38
	Total	58	100
PROM/PPROM duration in hours	18-24 hours	25	48.27
	More than 24 – 48 hours	18	31.03
	More than 48 – 96 hours	7	12.06
	More than 96 hours	8	13.79
	Total	58	100

The proportion of male patients (33, 56.89%) in the study was higher than that of the females (43.11%). The median birth weight in the study was 2.2 kgs with an interquartile range of 1.9-2.7 kgs. The mean birth weight for females (2.40 kgs) was higher than that of males (2.25 kgs) but the difference was not statistically significant (P=0.3044). Most of the study population was appropriate for gestational age (35, 60.34%) followed by small for gestational age (23, 39.66%). There were no large for gestational age patients seen in the study. Most of the patients seen in the study were low birth weight (31, 53.45%). Normal birth weight babies were only 36.30% of the total study population. Prim gravida and multigravida patients were equal (50%) in terms of proportion of patients in the study population. The median period of gestation was 36 weeks for the study population with an interquartile range of 34-39 weeks. Most of the patients in the study were term births (28, 48.27%) followed by late preterm (22, 37.93%). No patient with extreme pre-term birth was seen in the study.Most of the patients in the study were born via normal vaginal deliveries (34, 58.62%). Majority of the cases (56.89%) had latency period of >24 hours. 48.27% had latency period of < 24 hours.

● Outcome variables

Table-2 Investigational parameters

Parameter	Median	Interquartile range
Total leucocyte count (absolute)	16220	11517-21775
CRP-Q	1.95	0.86-6.9
Haemoglobin	17.70	16.5-19.20
PCV	49.15	45.8-53.70
Platelet count (in lakhs)	2.2	1.56-2.91

The median TLC in the study was 16220 (IQR – 11517-21775). The median CRP-Q was 1.95 (0.86-6.9). The median haemoglobin was 17.70 (16.50-19.20). The median PCV was 49.15 (IQR – 45.80-53.70). The median platelet count was 2.2 lakhs (IQR – 1.56-2.91).

Table-3: Categorization as per Investigational Parameter

Variable	category	Number of patients	Percentage
CRP status	Positive	11	18.96
	Negative	47	81.04
	Total	58	100
Thrombocytopenia	Yes	11	18.96
	No	47	81.04
	Total	58	100
Culture findings	Sterile	53	91.37
	Cons	1	1.72
	Klebsiella	2	3.44
	Pseudomonas	1	1.72
	Nacand	1	1.72
	Total	58	100
USG Cranium	Normal	17	29.31
	Abnormal findings present	0	0
	Not done	41	70.69
	Total	58	100
Chest Xray findings	Normal	11	18.96
	RDS	5	8.62
	Not done	42	72.42
	Total	58	100
Culture positive sepsis	Yes	5	8.62
	No	53	91.38
	Total	58	100

Eleven patients (18.96%) had CRP positive in the study. Eleven patients (18.96%) had thrombocytopenia in the study. Only 5 patients had growth positivity on blood culture (8.63%). Most of the patients in the study had sterile blood culture (53, 91.37%). No abnormal USG cranium findings were seen in the study. Only 5 patients (8.62%) in the study had features suggestive of RDS on x ray. Only 5 patients (8.62%) in the study had culture positive sepsis. Urine culture for 2 patients was done. 1 case each of sterile culture (No UTI) and candida species on culture (labelled as a case of UTI) was seen.

Table-4: Outcome parameters

	Category	Number of patients	Percentage
Assessment as per birth weight	Normal birth weight	21	36.20
	Low birth weight	31	53.45
	Very low birth weight	6	10.35
	Extremely low birth weight	0	0
	Total	58	100
Meconium stained liquor	Yes	4	6.88
	No	54	93.12
	Total	58	100
Birth Asphyxia	Yes	6	10.34
	No	52	89.66
Respiratory distress/TTN	Yes	16	27.58
	No	42	72.42
	Total	58	100
Respiratory distress syndrome/HMD	Yes	5	8.62
	No	53	91.38
	Total	58	100
Neonatal jaundice	Yes	22	37.93
	No	36	62.07
	Total	58	100
Shock	Yes	3	5.17
	No	55	94.83
	Total	58	100
Meningitis	Yes	1	1.72
	No	57	98.28
	Total	58	100
Hypocalcaemia	Yes	3	5.17
	No	55	94.83
	Total	58	100
Apnoea	Yes	6	10.34
	No	52	89.66
	Total	58	100
NICU Admission	Yes	28	48.27
	No	30	51.73
CPAP requireing	Yes	5	8.62
	No	53	91.38
	Total	58	100
Ventilator support	Yes	2	3.44
	No	56	96.56
	Total	58	100
Neonatal antibiotics	Yes	45	77.58
	No	13	22.42
	Total	58	100
Neonatal death	Yes	1	1.72
	No	57	98.28
	Total	58	100

Most of the patients had no meconium stained liquor in the study (54, 3.12%). Only 4 patients had meconium stained liquor (4, 6.88%). Birth asphyxia was seen in 6 patients in the study (10.34%). Out of total 58 cases, sixteen patients (27.58%) had respiratory distress/TTN in the study. Respiratory distress syndrome/HMD was seen in only 5 (8.62%) patients. 37.93% patients (22) in the study had neonatal jaundice. Only 3 patients (5.17%) in the study were seen to have shock. Meningitis was seen in only 1 (1.72%) patients in the study. Hypocalcaemia was seen in only 3 (5.17%) patients in the study.

Apnoea was seen in only 6 (10.34%) patients in the study. NICU admission was seen in 28 (48.27%) patients in the study. Neonatal death was seen in only 1 (1.72%) patients in the study. Only 5 patients (8.62%) in the study needed CPAP support. Only 2 patients (3.44%) in the study needed Ventilator support. Neonatal antibiotics were prescribed in 45 (77.58%) patients in the study.

DISCUSSION:

In the present study it was noted that there were equal number of prim

gravidae and multigravida. The outcome is tantamount with the outcome of the **Swati et al** [4] where number of the primigravida and multigravida were almost equal (multigravida 48% and primigravida 52%) and **Fatemeh et al**[5] with 55.9 % of primigravida and 44.1% of multi gravida. In the present study it was also noted that majority of the newborns were born via vaginal delivery. This finding was consistent with the finding of**Al-Q QA** [2]**, and Sanyal et al** [6] where majority were vaginaly delivered. It was noted that among the total cases the major proportion was consisted of the male child. This result was consistent with the study conducted **by Woranart et al**[7] where he reported that among all the newborns males were 53.96% and females were only 46.04%. It was also noted that majority among them were low birth weight (53.45%). This result was consistent with the result of **Ahilya et al**[8] who found a mean birth weight of 1.91 kg and study of **Saad et al** [3] in which mean of the birth weight was found to be 2.048 kg among cases under study. Median latency period noted in this study was 30 hours with majority of the cases with latency period of < 72 hours. This was consistent with the result of**Al-Qa Qa et al** [2] where 74% cases had PROM of < 72hrs duration and only 26% had PROM of >72 hrs., and was also consistent with the results of **Woranart et al** [7] in which majority of pregnancies had PROM of <72 hours. The present study was comparable with the results of the various study conducted elsewhere. Similar study conducted by **Begum et al** [9]noted that majority of the perinatal morbidities among babies with PROM were neonatal jaundice **(**10%), neonatal sepsis (11.5%), RDS (10%), birth asphyxia (5%). **Arpita et al** [10] noted an overall Perinatal morbidity was seen in 30% of cases. Most common neonatal morbidity noted was EONS which accounted for about 23.8%. Overall perinatal mortality was noted to be 1.43 % which was consistent with the present study. Most common cause of the neonatal mortality was noted to be birth asphyxia. **Ramesh et al**[11] in a similar study reported that RDS, meningitis, neonatal sepsis and pneumonia were among the major perinatal morbidity in the babies with premature membrane rupture**. Marcela et al**[12] in a similar studyconcluded that most frequent neonatal outcomes in pregnancies with premature rupture of membranes were prematurity, need for respiratory support because of mild respiratory discomfort, prophylactic antibacterial medication or therapy for neonatal infection and hospitalization in the neonatal intensive care unit. **Alam et al**[13] **i**n a similarstudy found that cases with history of PROM/PPROM had increased risk of perinatal morbidities like Thrombocytopenia in 38 % of the cases, CRP positive sepsis in 43% of the newborns, and blood culture positive sepsis in about 41%. Results of this study were also consistent with the results reported by **Nili et al** [14] in a similar study with 5.5 % incidence of culture positive sepsis among neonates with history of PROM/PPROM in their mother. In the present study CRP positive was seen 18.96 % of cases. The incidence of neonatal mortality in our study was only 1(1.72%) neonate out of 58. The result was consistent with the result obtained by Surayapalem et al[15] in their study with perinatal mortality rate of 1.5%.In other similar studies like by **Begum et al** [9] found an overall mortality rate of 7% compared to 5% with intact membrane.

Conflict of Intrest: no

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