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Original Research Article

A Prospective Study to Assess the Mother and Foetal Outcomes in Term Prelabor Rupture of Membranes.

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Abstract

Aim: To determine major maternal and neonatal outcomes in patients of PLROM.

Methods: A prospective study was conducted in the Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India, from December 2019 to December 2020. 120 pregnant women who reported to the labour room with premature rupture of membranes at or after 34 completed weeks to 41 weeks of gestation were analysed for maternal and perinatal outcome.

Results: The rate of maternal morbidity was 28.33% (34 out of 120), commonest was clinical chorio-amnionitis 10.83% (13 out of 120) followed by febrile morbidity seen in 8.33% (10 out of 120). Other maternal morbidities were in the form of wound infection-2.5% (3 out of 120), LRTI-1.67% (2 out of 120), MRP 0.83% (1 out of 120), puerperal sepsis 0.83% (1 out of 120). No maternal mortality was seen in the study. Perinatal morbidity was seen in 35.83% of cases. Clinical early onset neonatal infection was the commonest cause for perinatal morbidity noticed in 19.17% cases. Other perinatal morbidities were birth asphyxia 5.83% (7 out of 120), hyperbilirubinemia 3.33% (4 out of 120), congenital pneumonia 1.67% (2 out 120), congenital malformations 1.67% (2 out of 120), late onset sepsis 1.67% (2 out of 120). Perinatal mortality observed was 2.5% (3 out of 120). Out of 120 newborns of mothers who were having prelabour premature rupture of membranes at 34-41 weeks' gestation 65% had birth weight more than 2500 grams, 26.67% had low birth weight, 8.33 % had one minute Apgar score less than 7, 55 (45.83 %) were male and 65 (54.17%) were female, 26(21.67 %) had C-Reactive protein positive, out of them 9(7.5%) were having blood culture growth positive and 20(16.67%) were having WBC count more than 15,000.

Conclusion: PLROM is an enigmatic condition associated with high risk of maternal and perinatal morbidity and mortality. Major maternal morbidity is chorio-amnionitis (10.83%). Major perinatal morbidity observed is early onset neonatal infection (19.17%). Prediction of these morbidities is an important step in the management of infection-associated with PLROM.

Key words: Premature rupture of membrane; Maternal outcomes; Fetal outcomes

Introduction

Membranes rupture usually occurs during active phase of normal labour. Early rupture of membranes contributing to significant maternal and perinatal morbidity. However, the risk is more with multiple factors like duration of pregnancy and time of rupture of membranes[1]. The management of premature rupture of membranes has gone through various cycles of obstetric activity from neglect to immediate intervention. Paralleling these cycles of activity there have been varying degrees of concern about infection According to some studies incidence of premature rupture of membranes is around 5-10%[2]. PROM is linked to significant maternal and fetal morbidity and mortality. It has been shown to be the cause of 18%–20% and 21.4% of prenatal mortalities and morbidity respectively[3,4].

The three causes of fetal death associated with PROM are sepsis, asphyxia, and pulmonary hyperplasia. Women with intrauterine infection deliver earlier than non-infected women, and infants born with sepsis have a mortality rate four times higher than those without sepsis do[5]. Maternal complications include intra-amniotic infection, which occurs in 13%–60% of women with PROM, placental abruption, and postpartum endometritis[6,7]. Pre-term birth, infection, hypertensive disease, and asphyxia are cited as the most common contributors to maternal and fetal mortality in developing countries (LMICs)[8,9]. Ethiopia and other five countries contribute to about 50% of the maternal deaths in the globe. Ethiopia has designed a number of policies and strategies to improve maternal health and reduce child mortality. However, Ethiopia still has the higher number of maternal mortality in the world. This poses the greatest challenge to attain the goal for maternal health (MDG5)[10]. Evidence suggests that the rupture of membrane is related to infection,[11] membrane dysfunction on a molecular level,[12] collagen destruction, and programmed cell death in fetal membranes[13,14]. The complication risk of PROM is increased if the mother has previous PROM, low body mass index, concomitant infection of the gestational tissues, and longer the time elapsed between the rupture and delivery[15]. Diagnosis and proper management is very important to limit various fetal and maternal complications generally due to infection. However, in countries like Ethiopia where health facilities not well organized with necessary manpower, a large number of mothers come to the facilities late. PROM has essential significance for the further fate of pregnancy. Late diagnosis means wasted opportunity of appropriate intervention. In most cases, the diagnostics does not cause bigger problems, but in some situations it may not be easy to make the right diagnosis[16]. Aim and objective of the study was to determine major maternal and neonatal outcomes in patients of PLROM.

Materials and methods

A prospective study was conducted in the Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India, from December 2019 to December 2020, after taking the approval of the protocol review committee and institutional ethics committee.

120 pregnant women who reported to the labour room with premature rupture of membranes at or after 34 completed weeks to 41 weeks of gestation were analysed for maternal and perinatal outcome.

Results

There were a total of 120 patients taken into the study. The rate of maternal morbidity was 28.33% (34 out of 120), commonest was clinical chorio-amnionitis 10.83% (13 out of 120) followed by febrile morbidity seen in 8.33% (10 out of 120). Other maternal morbidities were in the form of wound infection-2.5% (3 out of 120), LRTI-1.67% (2 out of 120), MRP 0.83% (1 out of 120), puerperal sepsis 0.83% (1 out of 120). No maternal mortality was seen in the study.

Perinatal morbidity was seen in 35.83% of cases. Clinical early onset neonatal infection was the commonest cause for perinatal morbidity noticed in 19.17% cases. Other perinatal morbidities were birth asphyxia 5.83% (7 out of 120), hyperbilirubinemia 3.33% (4 out of 120), congenital pneumonia 1.67% (2 out 120), congenital malformations 1.67% (2 out of 120), late onset sepsis 1.67% (2 out of 120). Perinatal mortality observed was 2.5% (3 out of 120).

Out of 120 newborns of mothers who were having prelabour premature rupture of membranes at 34-41 weeks' gestation 65% had birth weight more than 2500 grams, 26.67% had low birth weight, 8.33 % had one minute Apgar score less than 7, 55 (45.83 %) were male and 65 (54.17%) were female, 26(21.67 %) had C-Reactive protein positive, out of them 9(7.5%) were having blood culture growth positive and 20(16.67%) were having WBC count more than 15,000.

Table 1: Maternal outcome

Maternal Outcome	Total	Percentage(%)
Healthy	86	71.67
Febrile morbidity	10	8.33
Clinical CAM	13	10.83
Wound Infection	3	2.5
LRTI	2	1.67
UTI	2	1.67
PPH	2	1.67
MRP	1	0.83
Puerperal Sepsis	1	0.83
Total	**120**	**100.0**

Table 2: Perinatal outcome

Perinatal Outcome	Total	Percentage(%)
Healthy	77	64.17
Birth Asphyxia	7	5.83
EONI	23	19.17
Late onset sepsis	2	1.67
Malformation	2	1.67
Hyperbilirubinemia	4	3.33
Congenital Pneumonia	2	1.67
Perinatal Mortality	3	2.5
Total	120	100.0

Table 3: Neonatal Parameters

Neonatal Parameters		Total=120	Percentage (%)
Birth Weight (gms)	<1500	2	1.67
	1500-2000	8	6.67
	2000-2500	32	26.67
	>2500	78	65
Apgar Score	<7	10	8.33
	>7	110	91.67
Gender	Male	55	45.83
	Female	65	54.17
CRP	Positive	26	21.67
	Negative	94	78.33
Blood Culture	Positive	9	7.5
	Negative	111	92.5
WBC count	<15000	100	83.33
	>15000	20	16.67

Discussion

PLROM is defined as spontaneous rupture of the membranes before the onset of labor; preterm pre labor Rupture of Membranes (PPLROM) includes those women presenting with PROM before 37 weeks' gestation. Mid-trimester PROM applies to those with premature membrane rupture at 14-26 weeks' gestation[17].

ACOG (2007) have suggested that PPLROM complicates 2 to 4% of all singleton and 7 to 20% of twin pregnancies[18]. Getahun reported 5% incidence of PLROM[19]

PLROM is associated with an increased risk of maternal morbidity. Maternal morbidity increased with increase in duration of PLROM. The rate of maternal morbidity was 28.33% (34 out of 120), commonest was clinical chorio-amnionitis 10.83% (13 out of 120) followed by febrile morbidity seen in 8.33% (10 out of 120). Other maternal morbidities were in the form of wound infection-2.5% (3 out of 120), LRTI-1.67% (2 out of 120), MRP 0.83% (1 out of 120), puerperal sepsis 0.83% (1 out of 120). No maternal mortality was seen in the study.

In Kodkany study maternal morbidity was seen in 21% of cases of PLROM[20]. Khashoggi (2004) Reported maternal morbidity including chorio-amnionitis (20.9%), postpartum endometritis (6.8%), abruption placenta (4%) and septicemia (0.5%)[21]. In our study the rate of clinical CAM was found to be low compared to others as we have a protocol of starting antibiotics in cases of PLROM.

The relationship of PLROM to the consequential fetal hazard is a matter of concern. In the present study, perinatal morbidity was seen in 35.83% of cases. Clinical early onset neonatal infection was the commonest cause for perinatal morbidity noticed in 19.17% cases. Other perinatal morbidities were birth asphyxia 5.83% (7 out of 120), hyperbilirubinemia 3.33% (4 out of 120), congenital pneumonia 1.67% (2 out 120), congenital malformations 1.67% (2 out of 120), late onset sepsis 1.67% (2 out of 120). Perinatal mortality observed was 2.5% (3 out of 120). Akter reported perinatal mortality rate has also been observed to be higher in association with PLROM[22]. In study by Sanyal perinatal morbidity was 32% and mortality was 5%[23]. Pulmonary

hypoplasia occurs in patients with PLROM that lasted longer than 2 weeks. Hence, in our study there was no neonate with pulmonary hyperplasia. Khashoggi 2004 reported the prenatal survival rate was 94.5% whereas neonatal outcomes included neonatal mortality (5.5%), respiratory distress (15.9%), sepsis (7.7%), and necrotizing enterocolitis 1%)[24]. Since we have included only the women with > 34 weeks' gestation and excluded the women with obstetric complications which could have given rise to compromised fetus, the perinatal mortality in our study was lesser than the other studies.

Conclusion

PLROM is an enigmatic condition associated with high risk of maternal and perinatal morbidity and mortality. Major maternal morbidity is chorio-amnionitis (10.83%). Major perinatal morbidity observed is early onset neonatal infection (19.17%). Prediction of these morbidities is an important step in the management of infection-associated with PLROM.

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