ORIGINAL ARTICLES

OUTCOME OF PREMATURE RUPTURE OF MEMBRANES – A STUDY OF 120 CASES IN DHAKA MEDICAL COLLEGE HOSPITAL

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Summary

Introduction: *Premature rupture of membrane or PROM means when membrane ruptures before the onset of labour at a gestational age less than 37 completed weeks. In Bangladesh, every year, around 28,000 women die due to complications of pregnancy and childbirth. Nonscientific intervention in PROM made at various levels intensify the pregnancy complications several times, thereby leading many more deaths of foetus and newborn. Aetiology of PROM is largely unknown. The possible causes are either reduction of membrane strength or an increase in intrauterine pressure or both. Proper diagnostic facilities, proper monitoring and standard protocol in the management can improve the maternal and fetal outcome.*

Aim and objective: *The aim of the study was to observe the incidence, type and maternal and fetal outcome of PROM.*

Materials and Method: *A prospective case control analytical study was carried out at Dhaka Medical College Hospital, Dhaka from May '2000 to December'2000. Total 120 patients were selected for this study among them 60 patients as case (Group A) and 60 patients were taken as control (Group B). Both primi and multigravida with Pregnancy more than 28 weeks with intact membrane as control and spontaneous rupture of membrane taken as case. High- risk patients such as hypertensive disorder of pregnancy, APH, cardiac disease, previous H/O caesarean section were excluded from the study. After taking proper history, speculum examination, some diagnostic investigations were carried out. Findings were recorded in predesigned questionnaire and statistical analysis were done using computerized software SPSS for Windows. A P value < 0.05 was taken as significant.*

Results: *In our study maternal complications were significantly higher in Group A patients (Chi-square test: X^2 = 6.263, df= 1, P< 0.05). Number of premature babies in PROM patients (25%) was significantly higher than control group. Perinatal morbidity was found higher in PROM (36.66%) compared to control group (31.66%). Most common morbidity was neonatal jaundice in PROM patients (13.33%) compared to babies of control group (8.33%).*

Conclusion: *This study focused on certain risk factors in relation to PROM which can be preventable and reduce incidence and improvement of maternal and fetal outcome.*

Key words: *PROM (Premature rupture of membrane), CRP (C- Reactive Protein).*

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Introduction:

Every woman dreams to be a mother in her life time. To be a mother, a woman must have a happy outcome of her pregnancy, both for the fetus and herself. Many factors influence the outcome of a pregnancy, and premature rupture of membrane (PROM) is one of them. PROM is designed when membrane ruptures before the onset of labour [1]. When membrane ruptures before the onset of labour at a gestational age <37 completed weeks, it is called preterm premature rupture of membrane. [2] PROM at term pregnancy is common, occurring in 6 to 10 percent of all term births.[3] Preterm PROM occurs in approximately 1% of all pregnancies. It is associated with 30-40 % of preterm birth and is one of the most common underlying causes of preterm delivery and perinatal death.[4]

In Bangladesh, every year, around 28,000 women die due to complications of pregnancy and childbirth. Nonscientific intervention in PROM made at various levels intensify the pregnancy complications several times, thereby leading many more deaths of foetus and newborn. The aetiology of PROM is largely unknown. It may be associated with an incompetent cervix, unstable lie, polyhydramnios, multiple gestation or possibly bacteriuria, specially beta-streptococci infection. [5] Infection in the female reproductive tract (*Ureaplasma urealyticum*, *Mycoplasma*) is associated with PROM and preterm labour. Anti-bacterial therapy when used in the expectant management of preterm PROM is associated with prolongation of pregnancy and reduction in the maternal and fetal morbidity.[6] Proper diagnostic facilities, proper monitoring facilities and a standard protocol in the management can improve the maternal and fetal outcome. PROM has a wide spectrum of research material; new lights are focused on the subject mostly in the developed countries but very few such studies have been carried out in our country. Therefore, we felt the need of a study on PROM.

Materials and Method

This prospective case control analytical study was carried out at Dhaka Medical College Hospital, Dhaka from May' 2000 to December '2000. The patients were included in the study from the admitted pregnant patients with PROM in one maternity unit in the Department of Obstetrics and Gynaecology, Dhaka medical college Hospital, Dhaka. The sample size was determined by using the following formula: n = $\{(Zá \div x)^2 \, p.q\} \div d^2$. Sample size was taken as 60 cases of PROM. A total number of 120 subjects fulfilling the selection criteria for the study. They were divided into 60 subjects with PROM before onset of labour were taken as case and 60 subjects with intact membrane before onset of labour were taken as control. Both Primi and multi gravid women with pregnancy more than 28weeks duration and spontaneous rupture of membrane before initiation of labour (Group A) were included in this study. High risk patients such as hypertensive disorder of pregnancy, APH, pregnancy with cardiac disease, pregnancy with caesarean section were excluded from the study. Data were collected by using a preformed questionnaire. After taking a proper history, gestational age was determined by last menstrual period, previous antenatal records, clinical examination and ultrasonography (where available). Membrane rupture was made by a sterile speculum examination or pooling of amniotic fluid in the posterior vaginal fornix following fundal pressure. During speculum examination, a high vaginal swab was taken from all the patients and sent for culture and sensitivity tests. On admission a blood sample was sent for leucocyte count and CRP for each and every patient. When decision was taken for termination, induction or augmentation was done with oxytocin. Per vaginal examination was restricted to minimum and no further per vaginal examination was done if decision of delivery by cesarean section was taken. Data were recorded in a predesigned questionnaire for each patient separately. Appropriate statistical analysis was done using computer based software SPSS. A P value <0.05 was taken as significant.

Results

During study period total 1414 pregnant women were admitted, among them 128 patients with history of PROM, so, the incidence is 9.05%.

Nine (0.64%) had gestational age <33 weeks, 15(1.06%) had gestational age 33-37 weeks and 104(7.35%) had gestational age >37 weeks. Age of the patients ranged between 15-39 years. Most of the patients belong to the age group 20-24 and 25-29 years. Majority of the patients in group A were primi (53.33%) and multipara constituted 46.67%. Poor socioeconomic condition was observed more in Group A patient (45%).There were no significant difference found regarding gestational age at delivery and antenatal checkup during current pregnancy in Group A and Group B patients. Significant difference was found in association of disease like UTI and anaemia in cases and control group. Past history of PROM and preterm delivery was more (23.33%) in cases than in control group (1.67%). Sexual contact within 1 week of rupture membrane was found (64.66%) in Group A. High vaginal swab culture showed positive growth in 50% cases and only 16.67%

positive growth found in control group. Majority of patients (38.33%) developed labour pain within 6 hours. In Group A, 36.67% delivered within < 12 hours and in group B, 15% delivered within <12 hours of rupture membrane. In group A, labour was spontaneous in 46.46% and induced in 53.33% cases and in group B, labour was spontaneous in 80% and induced in 20% cases. So distribution of mode of onset of labour in total number of patients between group A and group B is statistically highly significant (P<0.001). In group A, normal vaginal delivery was observed in 58.33% and cesarean section in 41.67% and in group B, normal vaginal delivery was observed in 61.67% and caesarean section in 38.33% cases, which was statistically not significant. Most common indication of caesarean section is fetal distress in both group A and B. Maternal complications were significantly higher in Group A patients.

Table I

Maternal outcome

Morbidity	Group A (n= 60)		Group B (n= 60)	
	No.	%	No.	%
Morbidity absent	38	(63.33)	51	(85)
Morbidity present	22	(36.67)	9	(15)
Puerperal sepsis	7	(11.67)	4	(15.00)
Wound infection	5	(8.33)	2	(6.67)
PPH	2	(3.33)	3	(5.00)
Chorioamnionitis	8	(13.33)	0	

Chi – square test : X^2 = 6.263, df =1, P < 0.05 (significant)

Table II

Distribution of fetal outcome

Disease	Group A (n=60)			Group B (n=60)			P
	No.	Conservative	Rx Admission	No. Rx Admission	Conservative		value[a]
No morbidity	38(3.33%)			41(68.33%)			>0.10[NS]
Morbidity	22(36.37%)			19(31.66%)			
Asphyxia	6(10%)	2(3.33%)	4(6.67%)	5(8.33%)	4(6.67%)	1(1.67%)	>0.10[NS]
RTI	4(6.67%)	3(5%)	1(1.67%)	3(5%)	2 (3.33%)	1 (1.67%)	>0.10[NS]
Jaundice	8(13.33)	7(11.67%)	2(3.33%)	5(8.33%)	2 (3.33%)	3(5%)	>0.10[NS]
Neonatal sepsis	4(6.67%)	4(6.67%)	0	2(3.33%)	1(1.67%)	1(1.67%)	>0.10[NS]
Congenital anomaly	0			2(3.33%)			
Neonatal death	0			2(3.33%)			

Apgar score at 5 minutes was > 7 in 75% of group A babies which was more than 83% in group B babies. There was no baby whose Apgar was <5 in group B, but in group A, it was 1.67%. Majority of the babies in both group A and Group B had birth > 2.5 kg. In group B, there was no baby whose birth weight was > 1.5 kg but in group A it was 1.67%. Male babies were 66.67% and 56.67% in Group A and group B respectively. Congenital anomalous babies in group B died in neonatal period.

Discussion:

PROM is a significant occurrence as it causes maternal complications, increased operative procedures and perinatal morbidity and even mortality. The purpose of this study was to identify the incidence, maternal and fetal complications of PROM and compare them with control and to find out the factors other than PROM affecting the outcome. Incidence of PROM is very difficult to precise. Incidence among such a small number of patients does not reflect the total hospital incidence of the nation. In addition, incidence cannot be estimated from hospital study because 80% deliveries in our country occur at home. In our study incidence of PROM was 9.05% of which 7.35% term PROM and 1.7% preterm PROM. Tasnim[7] in her study showed hospital incidence of PROM 8.12% which is close to our study. Majority of the patients belonged to the age group 20-24 years which is similar to the studies done by Tasnim,[6] Begum and Chowdhury[8] and Moretti and Sibal.[9] In this study, incidence of PROM was more in primi (53.33%) but Begum and chowdhury[8] showed 70% incidence in multi gravida. Maternal diseases have highly significant impact on PROM (P<0.001). In this study, 70% of PROM cases had maternal diseases, among which 33.33% had UTI, 23.33% had anaemia, 8.33% had lower genital tract infection, 3 .33% had malnutrition and 1.67% had sexually transmitted diseases. Most common microorganism found was E. coli (43.33%). clinical evidence of chorioamnionitis was found in 13.33% patients. Because of limitation of facility, anaerobic culture and other investigations, e.g. detection of Chlamydia, U.

urealyticum, mycoplasma for diagnosis of subclinical and clinical amniotic infections were not done. James et al. in their study showed prevalence of microbial invasion of amniotic cavity with PROM is 18-44%.[10]

Regarding maternal outcome, this study showed maternal morbidity as 36.67 percent compared to 15% in control group which means that morbidity increases more than twice in PROM patients. Tasnim [7] in her study showed maternal morbidity as 52.7 %, puerperal sepsis was most common findings similar to the study of Begum and chowdhury[8]. This study showed a reduction in the incidence of puerperal sepsis than two other studies.[7,8]. This may be due to use of combination antibiotic therapy. Mercer and Arheart [6] in their study showed antimicrobial therapy reduced both chorioamnionitis and puerperal sepsis. There was no maternal death in this study.

Regarding PROM cases 75% babies were mature and 25% premature. weight of babies above 2.5 kg in 53.33%, 45% between 1.5-2.5 kg and 1.67% between 1.0-1.5 kg. Among control group 86.67% babies were mature and 13.33% premature. so, number of premature babies in PROM were significantly higher than control group. Perinatal morbidity was higher in PROM (36.66%) compared to control group (31.66%). Most common morbidity was neonatal jaundice in babies of PROM patients (13.33%) compared to babies of control group (8.33%). Tasnim[7] in her study showed perinatal morbidity as 65.38%. Begum [11] in her study showed perinatal morbidity as 23% of PROM patients compared to 5% in control group. Begum and Chowdhury [8] showed 40%. There was no perinatal mortality and congenital anomaly in babies of PROM Patients. In this study both perinatal mortality and morbidity were lower than two previous studies. [7,8] This may be due to improved neonatal care service.

Conclusion

This study focused on certain risk factors in relation to PROM which can be preventable. Lower the gestational age higher fetal morbidity and mortality. Proper health education, improved health hygiene, adequate maternity and child care service, improved

transport system, improved neonatal care service can reduce maternal and perinatal morbidity and mortality.

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