

Original Article

Impact on Maternal and Fetal Outcome due to the Causative Organism for PROM

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**ABSTRACT**

Introduction: In Bangladesh, maternal mortality is 3.2 per thousand live births due to complications of pregnancy and childbirth. Nonscientific intervention in PROM at various levels intensifies the pregnancy complication several times, thereby leading to many more deaths of fetuses and newborns. However, the aetiology of PROM is largely unknown. **Methods and materials:** Over a period of six months, from July 2011 to December 2011, this study was conducted at the Department of Obstetrics and Gynecology, Mymensingh Medical College Hospital, in Mymensingh, Bangladesh. During this time, 100 PROM patients in all were enrolled in the study. Data were processed and analyzed by the Computer software SPSS (Statistical Package for Social Science). The level of significance was considered when the p-value was less than 0.05. **Result:** As a result of the maternal outcome, 40 (40%) women developed chorioamnionitis, 10 (10%) had puerperal sepsis, 8(8%) had DIC, and 42 (42%) had no problem. In fetal outcome, patients of 58% were live birth, 42% were still birth, 46% were mature, and 54% were premature, respectively. Besides, birth weights of 66% were <2.5 kg, and 34% were >2.5 kg. **Conclusion:** So, Chorioamnionitis was the most common maternal complication and poor fetal outcome in premature rupture of the membrane.

Keywords: Maternal, fetal, chorioamnionitis, premature rupture of the membrane

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INTRODUCTION

Untreated asymptomatic bacteriuria is associated with preterm delivery and low birth weight. Acute pyelonephritis is linked to preterm birth ^[1, 2]. Kaul et al. in

an experimental model of pyelonephritis in mice, confirmed that *E.coli* plays an important role in the pathogenesis of preterm delivery and low birth weight ^[3]. There is also evidence that rupture of fetal

membranes and premature delivery associated with group B *streptococci* in the urine of pregnant women and sepsis with group B *streptococci* in infants had mothers with a positive urine culture. Lower urogenital infection in pregnant women is an important factor in the appearance of the PROM, resulting in intrauterine infections at every stage of pregnancy. The frequency exists of intrauterine infection evaluate from 1 to 10% of pregnancies. Clinical chorioamnionitis complicates 1-5% of term pregnancies, but nearly 25% of preterm deliveries really increase morbidity and mortality of newborns and are also a reason for mothers' morbidity. PROM of mothers with UTI is an important risk factor for the evolution of intrauterine infections in newborns, besides did not ascertain the dependence between the values of bacteriology cultures taken from the urine of mothers and the importance of bacteriology cultures of the newborns' blood with clinic symptoms of intrauterine infection [4]. Premature (pre-labor) rupture of membranes (PROM) affects 8-10% of pregnancies at term. Although some physicians advocate for immediate induction of labor in this setting, citing various studies that have demonstrated increased risks of adverse maternal and neonatal morbidity with increased lengths of time from ruptures of membranes. Others pick expectant management based on reported associations between increased rates of caesarean section and immediate labor induction. In the setting of the term PROM as well as consideration of the preferences of some patients to avoid labor induction or the use of pharmacologic agents [4]. Most of the literature involving the use of steroids in the PROM population has investigated the effects on the incidence of RDS. Antenatal steroid

administration with PROM is of no benefit concerning the incidence of RDS, IVH, and length of neonatal hospitalization [5]. However, there appear to be beneficial effects on the incidence of BPD in the neonates whose mothers were exposed to steroids with PROM. Since BPD remains a significant aetiology of morbidity in the premature neonate, it would seem that efforts to reduce the incidence of this process would be of significant benefit. Tucker et al. conclude the administration of steroids in the PROM population produces long-term benefits justifying this practice [6]. National Institute of Child Health and Human Development, Maternal-Fetal Medicine Units Network, observed that women with a history of PROM had a 13.5% rate of PROM in a subsequent pregnancy compared to 4.1% in women with no such history [7]. Antibacterial therapy, when used in the expectant management of preterm PROM, is associated with the prolongation of pregnancy and a reduction in maternal and fetal morbidity. PROM is very often seen in our country (Bangladesh). Proper diagnostic facilities, proper monitoring facilities, and a standard protocol in the management can improve maternal and fetal outcomes.

METHODS & MATERIALS

This research was prospective and observational. It was conducted from July 2011 to December 2011 in the Department of Obstetrics and Gynecology, Mymensingh Medical College Hospital, Mymensingh, Bangladesh. The study population consisted of patients who were admitted to the hospital in the location mentioned above with PROM (preterm or term). The following state includes the study population's eligibility requirements.

Inclusion criteria:

The study includes patients with the following traits.

1. Pregnancy lasting more than 28 weeks
2. Emergency membrane rupture prior to the start of labor

Exclusion criteria:

The study excluded patients with high-risk conditions such as gestational hypertension, heart disease, and diabetes mellitus.

A total of 100 patients were taken and samples were obtained using a deliberate approach.

The variables examined were maternal age, gestational age, prenatal checkup, parity, maternal outcome, fetal outcome, and delivery method. Lower urogenital infection, polyhydramnios, numerous pregnancies, prior cervicovaginal surgery, cervicovaginal incompetence, prior P-PROM and PROM, and hemorrhage during the present pregnancy were risk factors. All patients were verbally informed of the study design, the study's goal, and their ability to withdraw from the experiment at any time and for any reason following the 1964 Helsinki Declaration for Medical Research Involving Human Subjects. Written consent was obtained from each subject. Data were collected by interview, observation, clinical examination and biochemical investigations and analyzed using SPSS (Statistical Package for Social Science). The test statistics were Chi-square (χ^2) Test and student's t Test. The level of significance was set at 0.05.

RESULTS

A total of 100 patients were consecutively included in the study.

Table I: Maternal age distribution

Age (years)	No. of patients	Percentage	Mean \pm SD
<20	12	12	27.10 \pm 4.49
20 – 25	26	26.0	
26-30	48	48.0	
31-35	14	14.0	
36-40	00	00	
Total	100	100	

Above table demonstrates that patients with 20 -30 years was predominant in PROM patients.

Table II: Distribution of gestational weeks

Gestational age in weeks	No. of patients	Percentage	Mean \pm SD
30 weeks	26	26.0	32.54 \pm 2.03
32 weeks	20	20.0	
33 weeks	22	22.0	
34 weeks	28	28.0	
39 weeks	04	4.0	
Total	100	100	

Table II shows gestational age, 26(26%) were at 30 weeks, 20(20%) were at 32 weeks, 22(22%) were at 33 weeks, 28(28%) were at 34 weeks and 4(4%) were at 39 weeks.

Table III: Distribution of antenatal check up

Antenatal Check up	No. of patients	Percentage
Regular	64	64
Irregular	36	36
Total	100	100

Table III displays 64(64%) patients were taken regular antenatal check and 36(36%) were irregular checkup.

Table IV: Initiation of labour

Labour	No. of patients	Percentage
Spontaneous	68	68
Induced	32	32
Total	100	100

Here it is found that 68(68%) patients start labor pain spontaneously.

Table V: Distribution of Parity

Parity	No. of patients	Percentage
Null parity	26	26.0
1	50	50.0
2 or more	24	24.0
Total	100	100.0

In our study half of the women 50 (50%) had para 1

Table VI: Method of delivery

Method of delivery	No. of patients	Percentage
Vaginal	24	24.0
Caesarean section	76	76.0
Total	100	100.0

Above table shows majority 76 (76%) of the women were delivered by caesarean section.

Table VII: Distribution of maternal outcome

Maternal Outcome	No. of patients	Percentage
Chorioamnionitis	40	40
Puerperal sepsis	10	10
DIC	8	8
No Problem	42	42
Total	100	100

Above table shows maternal outcome, 40 (40%) women developed chorioamnionitis, 10 (10%) had puerperal sepsis, 8(8%) had DIC and 42 (42%) had no problem.

Table VIII: Distribution of fetal outcome

Fetal Outcome	No. of patients	Percentage
Live birth	58	58
Still birth	42	42
Mature	46	46
premature	54	54
IUGR	55	55
Birth Weight	100	100
<2.5 kg	66	66
2.5 kg	34	34
Apgar score at 1 min		
<7	68	68
>7	32	32
Apgar score at 5 min		
<7	74	74
>7	24	24

Table VIII expresses 58% had live birth, 42% had still birth, 46% had mature and 54% had premature. In birth weight 66% were <2.5 kg and 34% were >2.5 kg. In Apgar score at 1 minute, 68% were <7 and 32% were >7. In Apgar score at 5 min, 74% were <7 and 24% were >24%

Table IX: Distribution of UTI among PROM patients

Type of PROM	No. of patients	No. of UTI infected PROM patients	Percentage
Preterm	52	10	19.23
Term	48	6	12.5
Total	100	16	16

Here, total 16 patients out of 100 PROM patients were admitted in hospital with urinary tract infection.

DISCUSSION

This prospective observational study was carried out for six months, from July 2011 to December 2011, in the Obstetrics and Gynecology Department of the Mymensingh Medical College Hospital in Mymensingh, Bangladesh. A purposeful sample of one hundred cases was taken. 12% of those studied were under 20 years old, 26% were between 20 and 25 years old, 48% were between 26 and 30 years old, and 14% were between 31 and 35 years old. The Mean \pm SD was 27.10 \pm 4.49. Kilpatrick et al. also found mean \pm SD 26.2 \pm 5.8years^[8]. Another study by Tanir et al. showed that mean \pm SD was 27.0 \pm 1.0 years^[9]. According to this study,

26% of women gave birth at 30 weeks, 20% at 32 weeks, 22% at 33 weeks, 28% at 34 weeks, and 4% at 39 weeks. Mean \pm SD was 32.54 \pm 2.03. Tanir et al. showed gestational age mean \pm SD was 32.7 \pm 1.2^[9]. Following our study, 26% of the patients had no para, 50% had para 1, and 24% had para 2. However, Kilpatrick et al.'s investigation revealed that 61.8% had no parity^[8]. Once more, we discovered 16% of patients had urinary tract infections, although Kilpatrick et al. only discovered 7.8% in their study^[8]. This study indicated that 68% of deliveries were spontaneous, whereas Dudley et al. found 57% were^[10]. Only 24% of our patients gave birth vaginally, yet 76% ultimately required cesarean sections. 40% of cesarean sections, according to Bengston et al. and Jennifer et al., occurred when the gestational age was 26 weeks^[11, 12]. 53.8% of deliveries were made vaginally, and 46.2% were cesarean sections, according to a different study by Tanir et al^[9]. This study found that 52% were preterm and 48% were term delivery, whereas Miller et al. identified no differentiation was preterm and term delivery in premature membrane rupture^[13]. In fetal outcome, 58% were live birth, and 42% were still birth. Birth weight of 66% was <2.5 kg, and 34% was >5 kg. Tanir et al. found mean \pm SD was 2008 \pm 260 (g) in their study^[9]. Our study showed the maternal outcome where 40% of patients with chorioamnionitis, 10% with puerperal sepsis, and 8% with DIC, respectively. Dudely et al. found 39.4% were chorioamnionitis^[10], Major et al. found 43.0% were chorioamnionitis^[14], and another study by Tanir et al. showed 53.8% were amnionitis^[9].

LIMITATIONS

These restrictions were taken into account in this study:

- The safety of expectant treatment at home for a woman with preterm PROM and a viable pregnancy has not been proven.
- Due to the small sample size of this investigation, it is possible that not all patients are represented by these findings.
- Financial and logistical limitations.

RECOMMENDATION

Following recommendations are laid down to reach to a rational decision:

- For a correct diagnosis of the PROM, biochemical, biophysical, and microbiological parameters should be available.
- In PROM, appropriate antibiotics should be used prophylactically to prevent chorioamnionitis, an intrapartum infection.
- If there are no maternal or fetal contraindications, patients with PROM before 32 weeks of gestation should be treated expectantly until 33 full weeks of gestation.
- To lower the chances of respiratory distress syndrome (RDS), perinatal mortality, and other morbidities, women with PROM should receive a single course of prenatal corticosteroids before 32 weeks of pregnancy.
- Delivery is advised if PROM begins at or after 34 weeks of pregnancy.
- Labor induction may be considered if fetal pulmonary maturity has been confirmed with PROM at 32 to 33 completed weeks of gestation.

CONCLUSION

40 (40%) of the women experienced chorioamnionitis, 10 (10%) puerperal sepsis, 8 (8%), and 42 (42%) had no issues. Patients' fetal outcomes spanned 58% live births, 42% still births, 46% mature births, and 54% preterm births. Additionally, 34% of newborns were born weighing more than 2.5 kg, while 66% were born weighing less than 2.5 kg. Therefore, chorioamnionitis was the most frequent maternal consequence and had a poor fetal prognosis in cases of early membrane rupture.

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