

Maternal and fetal outcome in preterm premature rupture of membrane: A cross sectional study

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Abstract

Background: The present study was conducted for assessing the maternal and fetal outcome in preterm premature rupture of membrane.

Materials & methods: A total of 100 pregnant subjects were enrolled in the present study. Only those subjects were enrolled who were diagnosed with preterm rupture of membrane (PROM). The outcome variables for this study were maternal and fetal outcomes, grouped as favorable and unfavorable (complications). All the results were recorded in Microsoft excel sheet and were analysed by using SPSS software.

Results: About 19% of the women showed unfavorable maternal outcomes. 79 percent of the subjects were of primigravida. Duration of PROM was less than 12 years in 68 percent of the patients. Out of 19 subjects with maternal complications, sepsis, wound infection and haemorrhage was seen in 10 percent, 5 percent and 4 percent of the patients respectively. Still birth was seen in 7 percent of the patients while need of NICU was seen in 21 percent of the cases.

Conclusion: In conclusion, PPRM is associated with a prenatal morbidity and the key to reducing the adverse effects of PPRM is to make a prompt diagnosis, admission and start antibiotic coverage.

Keywords: Maternal, Preterm, Premature rupture.

INTRODUCTION

Prelabor rupture of membranes (PROM) is defined as rupture of membranes before the onset of labor. When membrane rupture occurs before labor and before 37 weeks of gestation, it is referred to as preterm PROM (PPROM). There is a wide array of mechanisms that cause prelabor rupture of membranes. 1- 3 pPROM arises from complex, multifaceted pathways. Several epidemiological and clinical factors are considered precursors to pPROM. These include maternal reproductive tract infections, behavioral factors, obstetric complications. 4, 5

A number of risk factors for spontaneous preterm PROM have been identified. Intra-amniotic infection and decidual hemorrhage (placental abruption) occurring remote from term, for example, may release proteases into the choriodecidual tissues and amniotic fluid, leading to rupture of membranes. 5, 6 Hence; the present study was conducted for assessing the maternal and fetal outcome in preterm premature rupture of membrane.

Materials & methods

The present study was conducted for assessing the maternal and fetal outcome in preterm premature rupture of membrane. A total of 100 pregnant subjects were enrolled in the present study. Only those subjects were enrolled who were diagnosed with preterm rupture of membrane (PROM). The outcome variables for this study were maternal and fetal outcomes, grouped as favorable and unfavorable (complications). Complete demographic and clinical details of all the subjects was also recorded

separately. PROM was defined as a rupture of the membranes prior to the onset of labor at or beyond 37 weeks of gestation. All the results were recorded in Microsoft excel sheet and were analysed by using SPSS software.

Results

In the present study, a total of 100 subjects were evaluated. majority of the patients belonged to the age group of more than 30 years. About 19% of the women showed unfavorable maternal outcomes.79 percent of the subjects were of primigravida. Duration of PROM was less than 12 years in 68 percent of the patients.

Out of 19 subjects with maternal complications, sepsis, wound infection and haemorrhage was seen in 10 percent, 5 percent and 4 percent of the patients respectively. Still birth was seen in 7 percent of the patients while need of NICU was seen in 21 percent of the cases.

Table 1: Demographic data

| Variable | | Number | Percentage |
|--------------------------|--------------------------------|--------|------------|
| Age (years) | Less than 30 | 43 | 43 |
| | More than 30 | 57 | 57 |
| Residence | Rural | 41 | 41 |
| | Urban | 59 | 59 |
| Gravidity | Primi | 79 | 79 |
| | Multi | 21 | 21 |
| Duration of PROM | Less than 12 hours | 68 | 68 |
| | More than or equal to 12 hours | 32 | 32 |
| Previous history of PROM | Yes | 76 | 76 |
| | No | 24 | 24 |

Table 2: Maternal and fetal outcome

| Variable | | Number | percentage |
|-------------------------------------|--------------------------|--------|------------|
| Postpartum complications of mothers | Sepsis | 10 | 10 |
| | Wound site infection | 5 | 5 |
| | Haemorrhage | 4 | 4 |
| Outcome of neonates | Alive | 71 | 71 |
| | Alive with complications | 22 | 22 |
| | Still birth | 7 | 7 |
| Need of NICU | Yes | 21 | 21 |
| | No | 79 | 79 |

Discussion

Preterm prelabor rupture of the membranes (pPROM) remains a significant obstetric problem that affects 3-4% of all pregnancies and precedes 40% to 50% of all preterm births. pPROM arises from complex, multifaceted pathways. Worldwide, there is a slight difference in the prevalence of premature rupture of membranes and this could be due to the difference in the population studied. The incidence of PROM ranges from about 5% to 10% of all deliveries, and PPRM occurs in approximately 3% of all pregnancies. PROM is a significant cause of perinatal morbidity and mortality. The burden of PROM ranges from maternal and neonatal mortality and morbidity to national economic loss due to drug expense, hospitalization, absence from the workplace and expense to the health professionals.⁶⁻⁹ Hence; the present study was conducted for assessing the maternal and fetal outcome in preterm premature rupture of membrane.

In the present study, a total of 100 subjects were evaluated. majority of the patients belonged to the age group of more than 30 years. About 19% of the women showed unfavorable maternal outcomes.⁷ 9 percent of the subjects were of primigravida. Duration of PROM was less than 12 years in 68 percent of the patients. Our results were in concordance with the results obtained by previous authors who also reported similar findings. In a study conducted by Endale T et al, authors detected the maternal and fetal outcomes and associated factors in term PROM. They examined records of 4 525 women who gave birth in the hospital; out of these women, 185 were diagnosed with term PROM and all of them were included in the study. About 22.2% of the women showed unfavorable maternal outcomes. The most common cause of maternal morbidity and mortality was puerperal sepsis.¹⁰

In the present study, out of 19 subjects with maternal complications, sepsis, wound infection and haemorrhage was seen in 10 percent, 5 percent and 4 percent of the patients respectively. Still birth was seen in 7 percent of the patients while need of NICU was seen in 21 percent of the cases. In another study conducted by Yang et al, authors evaluated maternal and fetal outcomes of 73 consecutive singleton pregnancies complicated by preterm premature rupture of amniotic membranes. Among the 73 pregnant patients, there were 22 (30.1%) stillbirths and 13 (17.8%) neonatal deaths, resulting in a perinatal death rate of 47.9%. The perinatal survival rate based on gestational age at the onset of fetal membrane rupture was 12.1% at less than 23 weeks of gestation, 60% at 23 weeks, and 100% at 24 to 26 weeks. Maternal morbidity was minimal with puerperal endomyometritis in 5 (6.8%) cases, one of which became septic; however, there was no long-term sequela.¹¹ In a similar study conducted by Alam MM et al, authors reported the incidence and associated risk factors of PROM for culture-proven EONS. Incidence of PROM in this neonatal birth cohort was 27/1,000 live births. A total of 17 (4%) cases with blood-culture proven bacterial sepsis were identified within 72 hours of birth. Klebsiella pneumonia (n = 5; 29%) and Pseudomonas aeruginosa (n = 4; 24%) were the commonest isolates followed by group B Streptococcus and Escherichia coli Maternal fever, chorioamnionitis, PROM > 48 hr, neonatal prematurity < 34 weeks and low birth weight < 1,500 grams along with neonatal thrombocytopenia and raised CRP were found to be independent risk factors associated with culture-proven EONS in PROM.¹²

Conclusion

In conclusion, PPRM is associated with a prenatal morbidity and the key to reducing the adverse effects of PPRM is to make a prompt diagnosis, admission and start antibiotic coverage.

REFERENCES

1. Borgida AF, Mills AA, Feldman DM, et al. Outcome of pregnancies complicated by ruptured membranes after genetic amniocentesis. *Am J Obstet Gynecol.* 2000;183:937–939.
2. Johnson JW, Egerman RS, Moorhead J. Cases with ruptured membranes that “re-seal.” *Am J Obstet Gynecol.* 1990;163:1024–1030.
3. Tchkonina T, Zhu Y, van DJ, Campisi J, Kirkland JL. Cellular senescence and the senescent secretory phenotype: therapeutic opportunities. *J Clin Invest.* 2013;123(3):966–972.
4. Polettini J, Behnia F, Taylor BD, Saade GR, Taylor RN, Menon R. Telomere Fragment Induced Amnion Cell Senescence: A Contributor to Parturition? *PLoS One.* 2015;10(9):e0137188.
5. Menon R, Fortunato SJ. Infection and the role of inflammation in preterm premature rupture of the membranes. *Best Pract Res Clin Obstet Gynaecol.* 2007;21(3):467–478.
6. Jouan-Lanhouet S, Riquet F, Duprez L, Vanden Berghe T, Takahashi N, Vandenabeele P. Necroptosis, in vivo detection in experimental disease models. *Semin Cell Dev Biol.* 2014;35:2–13.
7. Vanden Berghe T, Grootjans S, Goossens V, et al. Determination of apoptotic and necrotic cell death in vitro and in vivo. *Methods.* 2013;61(2):117–129.

8. Sciscione AC, Manley JS, Pollock M, et al. Intracervical fibrin sealants: a potential treatment for early preterm premature rupture of the membranes. *Am J Obstet Gynecol.* 2001;184:368–373.
9. Reddy UM, Shah SS, Nemiroff RL, et al. In vitro sealing of punctured fetal membranes: potential treatment for midtrimester premature rupture of membranes. *Am J Obstet Gynecol.* 2001;185:1090–1093.
10. Endale T, Fentahun N, Gemada D, Hussen MA. Maternal and fetal outcomes in term premature rupture of membrane. *World J Emerg Med.* 2016;7(2):147-52.
11. Yang LC, Taylor DR, Kaufman HH, Hume R, Calhoun B. Maternal and fetal outcomes of spontaneous preterm premature rupture of membranes. *J Am Osteopath Assoc.* 2004 Dec;104(12):537-42
12. Alam MM, Saleem AF, Shaikh AS, Munir O, Qadir M. Neonatal sepsis following prolonged rupture of membranes in a tertiary care hospital in Karachi, Pakistan. *J Infect Dev Ctries.* 2014 Jan 15;8(1):67-73.