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Management of Premature Rupture of Membranes

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Abstract:

Context: *review and compare the latent period, maternal, and neonatal morbidity and mortality in patient with premature rupture of membranes (PROM) managed expectantly either with prophylactic antibiotic or without.*
Objective: *to determine if antibiotic treatment during expectant management of PROM will reduce maternal and infant morbidity and if it will prolong pregnancy.* ***Design:*** *analytical statistical prospective case – control study.* ***Setting:*** *Aleppo university hospital, department of Obstetrics and Gynecology, Syria..* ***Patients****: a total of 80 pregnant women > 28 weeks gestations with PROM were divided into 2 groups: Case group: patients with PROM managed expectantly with prophylactic antibiotics. Control group: patients with PROM managed expectantly without prophylactic antibiotics.*
Intervention : *Intravenous ampicillin (2-g dose every 6 hours) for 48 hours followed by oral amoxicillin 500 mg dose every 8 hours orally for five days , plus one dose of azithromycine 1g at admition .*
Main outcome measures*: Maternal outcome: maternal infectious morbidity such as chorioamnionitis, postpartum metritis and surgical wound infections. Neonatal outcome : birth weight, Apgar scores, ventilation assistance, rates of respiratory distress syndrome (RDS), intraventricular hemorrhage (IVH), necrotizing enterocolitis (NEC) ,neonatal infectious morbidity including (sepsis , pneumonia ,meningitis), and neonatal mortality.Median latent period.* ***Results:*** *Median latent period in the study group was significantly longer than in the control group P=0.044. Maternal infectious morbidity was comparable between groups P=0.14. Neonatal infectious morbidity was significantly lesser in study group P=0.02.* ***Conclusion:*** *we recommend that women with PROM with expectant management should receive prophylactic antibiotics to reduce infant and maternal morbidity and prolong latent period.*
Key words: *Antibiotics, Management, Premature, Rupture, Aleppo University.*

I. INTRODUCTION

Background: Premature rupture of membranes is rupture of membranes before the onset of labor (PROM). PROM complicates approximately 3% [1]. The optimal approach to clinical assessment and treatment of women with PROM remains controversial.

Etiology:
PROM can result from a wide array of pathologic mechanisms that act individually or in concert [2, 3].

Risk factor:

- History of premature rupture of membranes is a major risk factor for PROM
- amniotic infection
- Short cervical length
- Second and third trimester bleeding
- Low socioeconomic status
- Low body mass index
- Cigarette smoking and illicit drug use [4, 5, 6, 7, 8].

Term premature rupture of membranes: complicates approximately 8% of pregnancies. 50% of women with PROM at term gave birth within 5 hours and 95% gave birth within 28 hours of membranes rupture [9].

Preterm premature rupture of membranes (PPROM): 50% of women with PPROM birth within 1 week of membranes rupture [3].

Latent period after membranes rupture: Is the time interval between the rupture of membranes and delivery, and is inversely correlates with the gestational age at membranes rupture [10]. Among women with preterm PROM, clinically evident amniotic infection occurs in approximately 15–25%, and postpartum infection occurs in approximately 15–20%; the incidence of infection is higher at earlier gestational ages [4, 11, 12]. The most significant risks to the fetus after preterm PROM is prematurity. Respiratory distress has been reported to be the most common complication of preterm birth [13]. Sepsis, intraventricular hemorrhage, and necrotizing enterocolitis also are associated with prematurity [14, 15]. The most serious maternal complications after PROM include chorioamnionitis, endometritis, abruptio placentae, and retained placenta [16].

II. DIAGNOSIS

Most cases of PROM can be diagnosed on the basis of the patients' history and physical examination with speculum. Digital examination generally should be avoided unless the patient appears to be in active labor or delivery seems imminent [17, 18].

The diagnosis can be confirmed by visualization of amniotic fluid passing from the cervical canal and pooling in the vagina.
Other approach:

- basic PH test of vaginal fluid
- ferning test
- ultrasonographic examination of amniotic fluid volume
- Fetal fibronectin [19].

Box 1. Chronologic Management of Premature Rupture of Membranes

Early Term and Term (37 0/7 weeks of gestation or more)
- Proceed to delivery
- GBS prophylaxis as indicated

Late Preterm (34 0/7–36 6/7 weeks of gestation)
- Same as for early term and term

Preterm (24 0/7–33 6/7 weeks of gestation)*
- Expectant management
- Antibiotics recommended to prolong latency if there are no contraindication
- Single course corticosteroids
- GBS prophylaxis as indicated

Less than 24 weeks of gestation
- Patient counseling
- Expectant management or induction of labor
- Antibiotics are not recommended before viability
- GBS prophylaxis is not recommended before viability
- Corticosteroids are not recommended before viability
- Tocolysis is not recommended before viability
- Magnesium sulfate for neuroprotection is not recommended before viability

III. MATERIAL AND METHODS

This study was approved in Aleppo university hospital, department of Obstetrics and Gynecology, Syria. Women admitted to the department between January 2014 and January 2016 with gestational age (GA) greater than 28 weeks suffered from PROM.

A total of 80 women with PROM were included. All women who were less than 34 weeks had a single course of antenatal corticosteroids to induce fetal lung maturity. Two-day's intravenous ampicillin followed by five days oral amoxicillin with one dose azithromycin were used as prophylactic antibiotics in women who were managed expectantly with prophylactic antibiotics (case group – study group). Women who managed expectantly without prophylactic antibiotics were the control group.

We excluded cases that had fetal anomaly or any conditions that would require the pregnancy to be terminated upon admission including chorioamnionitis or fetal distress. Diagnosis of PROM was based on a combination of history, gross leakage of amniotic fluid, and oligohydramnios by ultrasonogram.

Latent period was defined as the time interval between the rupture of membranes and delivery.
Data on maternal age, gravidity, parity, GA at admission, latent period, mode of delivery, maternal and neonatal outcomes were extracted. Demographic characteristics, latent period, maternal and neonatal outcomes were compared between groups.

Statistical analysis:

Statistical analysis was performed with SPSS software. Data was presented as mean ± standard deviation (SD), median and percentage. Continuous variables were compared by student t test. A P-value <0.05 was considered statistically significant.

IV. RESULTS

A total of 80 cases of PROM were included; 40 cases received prophylactic antibiotics (study group), while 40 cases did not received prophylactic antibiotics (control group). There were no statistical differences between study and control groups for age, parity, and GA at admission. Median latent period in the study group was significantly longer than in control group (P =0.044).

Maternal infectious morbidity such as chorioamnionitis, postpartum metritis and surgical wound infections were comparable between groups (P=0.14). There were no significant differences between study and control groups for mode of delivery, birth weight, Apgar scores.

Rates of respiratory distress syndrome (RDS), necrotizing enterocolitis (NEC) were significantly less in the study group than in control group. There were no significant differences between study and control groups for intraventricular hemorrhage (IVH), and neonatal mortality. Neonatal infectious morbidity including sepsis, pneumonia, meningitis, and ventilation assistance were significantly less in the study group than in control group (p = 0.02).

Table 1. Demographic characteristics between groups

Characteristics	Study group (n =40)	Control group (n =40)	P value
Age	26.6	26.8	0.891
Parity			
0	16 (40%)	8 (20%)	
≥1	24 (60%)	32 (80%)	
GA at admission (weeks)	32.6	32.7	0.858

Table 2. Clinical course and maternal morbidity between groups

Character	Study Group (n=40)	Control Group (n=40)	P value
Latency periods (days) median	5.6	1.8	0.044
Mode of delivery			0.133
- Vaginal delivery	31 (77%)	36 (90%)	
- Cesarean section	9 (23%)	4 (10%)	
Maternal WBC median	10.3	10.6	0.746
Maternal infectious morbidity	2 (5%)	6 (15%)	0.140

Table 3. Neonatal outcomes between groups

Character	Study Group (n=40)	Control Group (n=40)	P value
Birth weight (grams)	2735	3240	0.4
Apgar scores			
At 1 minute < 7	16 (40%)	10 (25 %)	0.156
RDS	12 (30%)	22 (55%)	0.024
NEC	8 (20%)	18 (45%)	0.017
IVH	10 (25%)	16 (40%)	0.156
Infectious morbidity			
-Sepsis	10 (25%)	28 (70%)	0.029
-Pneumonia	7 (17%)	21 (52%)	0.001
-Meningitis	5 (12%)	11 (27%)	0.096

Ventilation assistance	14 (35%)	30 (75%)	0.000
Mortality	4 (10%)	4 (10%)	1.00

V. CONCLUSION

Using of prophylactic antibiotics in patients with PROM increase the length of latent period with low Maternal and neonatal morbidity which confirms the benefit of prophylactic antibiotics management of PROM.

REFERENCES

[1] Waters TP, Mercer B. Preterm PROM: prediction, prevention,principles. Clin Obstet Gynecol 2011; 54:307–12. (Level III) [PubMed]
[2] Moore RM, Mansour JM, Redline RW, Mercer BM,Moore JJ. The physiology of fetal membrane rupture:insight gained from the determination of physical properties.Placenta 2006;27:1037–51. (Level III) [PubMed]
[3] Mercer BM. Preterm premature rupture of the membranes.Obstet Gynecol 2003; 101:178–93. (Level III)[PubMed] [Obstetrics & Gynecology]
[4] Garite TJ, Freeman RK. Chorioamnionitis in the pretermgestation. Obstet Gynecol 1982; 59:539–45. (Level II-3)
[5] Mercer BM, Goldenberg RL, Moawad AH, Meis PJ,Iams JD, Das AF, et al. The preterm prediction study:effect of gestational age and cause of preterm birth onsubsequent obstetric outcome. National Institute of ChildHealth and Human Development Maternal-Fetal Medicine Units Network. Am J Obstet Gynecol 1999; 181:1216–21. (Level II-2) [PubMed]
[6] Asrat T, Lewis DF, Garite TJ, Major CA, Nageotte MP,Towers CV, et al. Rate of recurrence of preterm premature rupture of membranes in consecutive pregnancies. Am J Obstet Gynecol 1991; 165:1111–5. (Level II-2) [PubMed]
[7] Mercer BM, Goldenberg RL, Meis PJ, Moawad AH, Shellhaas C, Das A, et al. The Preterm Prediction Study: prediction of preterm premature rupture of membranes through clinical findings and ancillary testing.The National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Am J Obstet Gynecol 2000; 183:738–45. (Level II-2) [PubMed] [Full Text]
[8] Treadwell MC, Bronsteen RA, Bottoms SF. Prognostic factors and complication rates for cervical cerclage: a review of 482 cases. Am J Obstet Gynecol 1991; 165: 555–8. (Level II-3) [PubMed]
[9] Hannah ME, Ohlsson A, Farine D, Hewson SA, Hodnett ED, Myhr TL, et al. Induction of labor compared with expectant management for prelabor rupture of the membranes at term. TERMPROM Study Group. N Engl J Med 1996; 334:1005–10. (Level I) [PubMed]
[10] Melamed N, Hadar E, Ben-Haroush A, Kaplan B, Yogev Y.Factors affecting the duration of the latency period in preterm premature rupture of membranes. J Matern Fetal Neonatal Med 2009; 22:1051– 6. (Level II-3) [PubMed]
[11] Kenyon S, Boulvain M, Neilson JP. Antibiotics for preterm rupture of membranes. Cochrane Database of Systematic Reviews 2010, Issue 8. Art. No.: CD001058. DOI: 10.1002/14651858.CD001058
[12] Beydoun SN, Yasin SY. Premature rupture of the membranes before 28 weeks: conservative management. Am J Obstet Gynecol 1986; 155:471–9. (Level III) [PubMed]
[13] Lemons JA, Bauer CR, Oh W, Korones SB, Papile LA, Stoll BJ, et al. Very low birth weight outcomes of the National Institute of Child health and human development neonatal research network, January 1995 through December 1996. NICHD Neonatal Research Network. Pediatrics 2001; 107:E1. (Level II-3) [PubMed]
[14] Spinillo A, Capuzzo E, Stronati M, Ometto A, Orcesi S,Fazzi E. Effect of preterm premature rupture of membranes on neurodevelopmental outcome: follow up at two years of age. Br J Obstet Gynaecol 1995; 102:882–7. (Level II-2) [PubMed]
[15] Yoon BH, Romero R, Park JS, Kim CJ, Kim SH, Choi JH, et al. Fetal exposure to an intra-amniotic inflammation and the development of cerebral palsy at the age of three years. Am J Obstet Gynecol 2000; 182:675–81. (Level II-2) [PubMed]
[16] Waters TP, Mercer BM. The management of preterm premature rupture of the membranes near the limit of fetal viability. Am J Obstet Gynecol 2009; 201:230–40. (Level III) [PubMed]
[17] Alexander JM, Mercer BM, Miodovnik M, Thurnau GR, Goldenberg RL, Das AF, et al. The impact of digital cervical examination on expectantly managed preterm rupture of membranes. Am J Obstet Gynecol 2000; 183: 1003–7. (Level II-2) [PubMed]
[18] Munson LA, Graham A, Koos BJ, Valenzuela GJ. Is therea need for digital examination in patients with spontaneous rupture of the membranes? Am J Obstet Gynecol 1985; 153:562–3. (Level III) [PubMed]
[19] Eriksen NL, Parisi VM, Daoust S, Flamm B, Garite TJ, Cox SM. Fetal fibronectin: a method for detecting the presence of amniotic fluid. Obstet Gynecol 1992; 80: 451–4. (Level II-2) [PubMed] [Obstetrics & Gynecol*ogy*].