

## Successful pregnancy outcome after use of antibiotics in the expectant management of preterm premature rupture of membranes: A case report

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*Preterm premature rupture of membranes (PPROM) is an obstetric complication that can cause maternal and neonatal morbidity. It occurs in 7.2 per 1000 deliveries. Herein, we report a case with PPRM at 29<sup>+</sup> weeks gestation. The mother had a history of two previous unsuccessful pregnancies. After discussion with the patient and her husband, we used antibiotics in an expectant management of this case for a total one of week with antenatal corticosteroids administered and repeated every week. The pregnancy was prolonged about four weeks with no maternal morbidity. Neonatal pneumonia and septicemia was successfully treated with antibiotic therapy. To our knowledge, there has been no previously reported case of antibiotics used as an adjunctive management in the expectant management of Thai women with PPRM.*

**Key words** : Pregnancy outcome, Antibiotic, Expectant management, PPRM.

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วรพงศ์ ภูพงค์, บุรยา ไววนิชกุล, ภาณุวัฒน์ สำเนียงเสนาะ, สุรางค์ ตรีรัตนชาติ. ความสำเร็จของการตั้งครรภ์ที่เกิดจากการใช้ยาปฏิชีวนะร่วมในการดูแลผู้ป่วยที่มีภาวะถุงน้ำคร่ำแตกก่อนการเจ็บครรภ์คลอดที่อายุครรภ์ยังไม่ครบกำหนด : รายงานผู้ป่วย. จุฬาลงกรณ์เวชสาร 2544 ก.พ; 45(2): 161 – 6

ภาวะถุงน้ำคร่ำแตกก่อนการเจ็บครรภ์คลอดที่อายุครรภ์ยังไม่ครบกำหนด เป็นภาวะแทรกซ้อนทางสูติศาสตร์อย่างหนึ่งที่เกิดภาวะทุพพลภาพของมารดาและทารก พบได้ 7.2 ต่อการคลอด 1000 ราย คณะผู้รายงานได้รายงานผู้ป่วยตั้งครรภ์ 29 สัปดาห์ที่เกิดภาวะดังกล่าว ผู้ป่วยมีประวัติการตั้งครรภ์ 2 ครั้งที่ไม่ประสบผลสำเร็จ หลังจากที่คุณหมอผู้รายงานได้บอกถึงข้อดีข้อเสียของการใช้ยาปฏิชีวนะและได้รับความยินยอมจากผู้ป่วยและสามีแล้ว จึงได้ให้ยาปฏิชีวนะแก่ผู้ป่วยเป็นเวลาหนึ่งสัปดาห์และให้ยาคอร์ติโคสเตียรอยด์ทุกสัปดาห์ การตั้งครรภ์สิ้นสุดลงด้วยผลลัพธ์ที่ดี โดยสามารถยืดระยะเวลาของการตั้งครรภ์ออกไปอีก 4 สัปดาห์ และไม่พบภาวะแทรกซ้อนในมารดา พบเพียงภาวะปอดบวมและการติดเชื้อในกระแสเลือดในทารกซึ่งรักษาหายได้ด้วยยาปฏิชีวนะจากความรู้ที่มีอยู่ในปัจจุบัน ผู้ป่วยรายนี้ถือเป็นผู้ป่วยคนไทยรายแรกที่ได้รับการรายงานถึงการนำยาปฏิชีวนะมาใช้ร่วมในการดูแลผู้ป่วยตั้งครรภ์ที่มีภาวะถุงน้ำคร่ำแตกก่อนการเจ็บครรภ์คลอดที่อายุครรภ์ยังไม่ครบกำหนด

**คำสำคัญ :** ผลการตั้งครรภ์, ยาปฏิชีวนะ, การดูแลรักษา, ภาวะถุงน้ำคร่ำแตกก่อนการเจ็บครรภ์คลอดที่อายุครรภ์ยังไม่ครบกำหนด

Preterm premature rupture of membranes (PPROM) is an obstetric complication, defined as rupture of membranes before onset of labor and prior to 37 weeks gestation.<sup>(1,2)</sup> Based on our previous study, it occurs in 7.2 per 1000 deliveries.<sup>(3)</sup> Management of these PPRM pregnant women is expectant. In the course of the last decade, there have been many clinical trials evaluating the effect of antibiotics in the management of PPRM. They have demonstrated that antibiotics can prolong pregnancy, as well as decrease maternal and neonatal morbidity.<sup>(4,6)</sup> Herein, we report a case of PPRM with antibiotics used during expectant management, leading to successful maternal and neonatal outcomes.

### Case report

A 30-year-old gravid 3, para 0 pregnant woman, 29<sup>+</sup> weeks gestation presented to King Chulalongkorn Memorial Hospital on January 10, 2000 with premature rupture of membranes having occurred 9 hours previously. She had no fever and no uterine contractions. Her last menstrual period had been on June 15, 1999. She had a history of two previous unsuccessful pregnancies: her first pregnancy had ended with spontaneous abortion at 8 weeks gestation, her second pregnancy had ended with premature rupture of membranes at 27 weeks gestation. The newborn was dead at the first day postpartum due to severe respiratory distress. Otherwise her past history and family history were unremarkable. She had come to antenatal care at 6 weeks gestation. Before this admission, the antenatal course was uneventful.

At admission, rupture of membranes was proven and cervical swab culture & sensitivity test was performed. Physical examination revealed the

following: blood pressure 120/80 mmHg, pulse rate 84/min, respiratory rate 20/min and body temperature 36.4°C. The uterine fundal height was 2/4 above the umbilicus, the fetus was in breech presentation with a fetal heart rate of 144 beats/min. No uterine contraction was detected. Sterile speculum examination revealed a closed cervix. Laboratory investigation demonstrated complete blood count (CBC): hemoglobin 12.6 g %, hematocrit 37.2 %, mean corpuscular volume (MCV) 83.7 fentoliter, mean corpuscular hemoglobin (MCH) 28.3 pg, mean corpuscular hemoglobin concentration (MCHC) 33.2 g/dl, red cell distribution width (RDW) 14.1%, white blood cells 11,200/mm<sup>3</sup>, neutrophils 80 %, platelet count 285,000/mm<sup>3</sup>, urine analysis (UA) was normal. Transabdominal ultrasonography demonstrated a single viable fetus, breech presentation, the biometry corresponding with the gestational age. The amniotic fluid index (AFI) was 3 cm. The nonstress test (NST) was reactive.

We managed this case with admission for bed rest and expectant management. We discussed with the patient and her husband about the risk versus benefit of antibiotics in the management. After the patient and her husband decided and signed the informed consent, the antibiotic ceftriazone, 1 g every 12 hours, was administered parenterally for 2 days followed by oral cefdinir, 100 mg, every 8 hours for 5 days. Four doses of dexamethasone, 6 mg, were given intramuscularly every 12 hours and this regimen was repeated every week until 34 weeks gestation. The result of the cervical swab culture revealed no growth of any organism. Maternal and fetal surveillance was performed daily. CBC, UA, cervical swab culture & sensitivity test and ultrasonography with Doppler

study were performed weekly with all within normal limits. The patient and fetus remained well, with no uterine contraction or signs of chorioamnionitis being detected. However minimal amniotic fluid leakage was detected continuously during expectant management.

The pregnancy continued until 33<sup>+3</sup> weeks gestation, when the patient had a regular contraction. Physical examination revealed regular contractions of 30-sec. duration at 5-min intervals. The fundal height was 3/4 above the umbilicus, the fetus was in the breech presentation with a heart rate of 140 beats/min. Pelvic examination revealed 1 cm-opened cervical os with 50 % effacement. Emergency cesarean section was prepared due to preterm breech presentation, but unfortunately the male newborn was delivered by breech assisting with a birth weight of 1,580 g and an Apgar score of 8 and 10 at 1 and 5 min, respectively. The newborn was admitted to the neonatal intensive care unit (NICU) because of pneumonia and septicemia but required only oxygenation. No respiratory distress syndrome was detected. Parenteral antibiotics (ampicillin and gentamicin) were started and continued for 2 weeks. The results of cord blood and gastric content culture & sensitivity test showed group B streptococcus and the pathology of the placenta and membranes showed acute chorioamnionitis. The newborn was discharged at the 14<sup>th</sup> day after completion of the antibiotic treatment. The patient and her baby were well at the 6-week follow up.

## Discussion

PPROM is defined as rupture of membranes before onset of labor and prior to 37 weeks gestation.<sup>(1,2)</sup> Based on our previous study, it occurs in 7.2 per 1000 deliveries.<sup>(3)</sup> Many factors have been shown to increase

the risk of PROM, including intrauterine infection and ascending infection from the lower genital tract.<sup>(7)</sup> Only 40 % PPRM cases present with a clinical diagnosis of chorioamnionitis.<sup>(8)</sup> Our case confirmed this; there was no clinical chorioamnionitis and no pathogenic organism detected by cervical swab culture, but pathology of the placenta and membranes demonstrated acute chorioamnionitis and the cord blood culture showed group B streptococcal infection.

In our case, PROM occurred far from term and there was no clinical chorioamnionitis, uterine contraction, or fetal compromise. Based on previous reports,<sup>(3,9)</sup> the incidence of neonatal morbidity such as intraventricular hemorrhage (IVH), patent ductus arteriosus (PDA), necrotizing enterocolitis (NEC) and sepsis increases prior to 34 weeks gestation. We decided to manage this patient with expectantly in accordance with previous recommendations<sup>(1,10)</sup> because of the significant fetal benefit, decreased neonatal morbidity and mortality in women with a prolonged latent period.<sup>(11-13)</sup>

In our case expectant management consisted of bed rest to enhance amniotic fluid reaccumulation.<sup>(1)</sup> Antenatal corticosteroids were administered with regimens of dexamethasone, four doses of 6 mg intramuscularly at 12-hour intervals<sup>(14,15)</sup> until 34 completed weeks of gestation. Antenatal corticosteroid administered in PPRM significantly reduces the risk of respiratory distress syndrome (RDS), IVH and NEC.<sup>(16-18)</sup> There was neither RDS, IVH nor NEC in this newborn infant. In our case antibiotics were administered as previously suggested.<sup>(1,19)</sup> We chose ceftriaxone for parenteral and cefdinir for oral administration. These drugs are broad spectrum and were given as an initial 48-hour intravenous therapy

followed by a short course of oral therapy, as recommended. <sup>(7,19)</sup> Ceftriaxone and cefdinir are classified as category B drugs used in pregnancy <sup>(20,21)</sup> and able to cover organisms which cause chorioamnionitis in our hospital. <sup>(21-22)</sup> Our case concluded with the good result that the pregnancy was prolonged for about four weeks, incurring neither maternal morbidity nor RDS, IVH or NEC in the newborn. This was similar to the experience reported in previous studies demonstrating that antibiotics significantly prolonged pregnancy, and decreased maternal morbidity (chorioamnionitis and postpartum endometritis) as well as neonatal morbidity (RDS, IVH and NEC). <sup>(4-6)</sup> The newborn was infected with group B streptococcal pneumonia which was resolved with a good outcome after antibiotic therapy. Although benefit of ceftriaxone and cefdinir are broad spectrum antibiotics and good compliance with using in our case, risk of increasing bacterial resistance and expensive cost should be outweigh. Other antibiotics such as penicillin and ampicillin, there were ineffective in expectant management of PPRM from previous studies. <sup>(7)</sup> Further study should be conducted to find the appropriate antibiotics in expectant management of PPRM.

In conclusion, after careful assessment the benefits of antibiotics may outweigh the risks as an adjunctive management in the expectant management of PPRM cases. Such therapy may prolong pregnancy and decrease maternal and neonatal morbidity. Prior to recommending this as standard therapy however, further prospective clinical trials should be conducted to evaluate the benefit of antibiotics in the expectant management of our PPRM patients.

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