Premature Rupture Of Membranes At Week 19: Favorable Pregnancy Outcome And Four Years Follow-Up After Expectant Management

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Citation

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Abstract

Premature rupture of membrane (PROM) and preterm birth are the major public health problems accounting for mortality and morbidity both in infant and mother. Although, there are some reports available in world literature on PROM at week 20 and early preterm births prior to week 34, but most of these cases end in catastrophic outcome. In the present study a case report on PROM, associated with persistently marked oligohydramnios at week 19 is presented and discussed. The patient was managed expectantly and delivered at week 35 without any complication. Four years follow-up in pediatric clinics revealed a healthy normal child. Even though, the PROM was not anticipated – but its timely detection, prompt laboratory investigations, scrupulous patient care and meticulous management of infections, illness and hyperbilirubinemia lead to a favorable outcome. Subsequent care of the baby in the Neonatal Intensive Care Unit (NICU) and good oral feeding from day 1 appears to influence the normal progress of the baby.

INTRODUCTION

Premature birth is a significant health problem throughout the world. It accounts for over 13, 000 deaths and 30, 000 surviving infants with life-long morbidity. PROM is the starting episode that escorts previable births of about 40% of these premature infants[1]. Fetal membrane rupture is a calamitous tissue failure, an exclusive event that is either spontaneous or occur prior to onset of regular uterine contractions.

PROM is detrimental to the integrity of amniotic fluid and the normal development of the human fetus, especially, in the second trimester, when it is associated with significant perinatal morbidity and mortality as well as maternal morbidity. It is diagnosed by visualization of liquor by sterile speculum examination[2].

Literature reports suggest PROM between 19-20 weeks to be crucial in continuation of the pregnancy and a successful outcome of a healthy and mature infant[3,4]. Severe oligohydramnious more than 14 days after PROM at less than 25 weeks has a predictive neonatal morbidity of >90[5]. Furthermore, Hsu et al[6]. reported termination of pregnancy due to poor prognosis of oligohydramnios occurring during secondary trimester.

Notwithstanding the complications of PROM, the outcome is not uniformly poor[7]. In certain cases of PROM, it is possible to successfully prolong the latency from membrane rupture to delivery[8]. This case has been a successful attempt of conservative management to prolong the duration of pregnancy to 35 weeks and attain stability of the fetus. This report is an addition to the few cases that have been reported in the literature. Furthermore, it has the credit of being the first case reported with four years follow-up of the child.

CASE PRESENTATION

A 21 year old Saudi primigravida was admitted through the emergency at a gestational age of 19 weeks with history of per vaginal leakage of fluid, the flow was a constant trickle. There was no associated fever, abdominal pain, urinary symptoms, trauma or recent coitus nor any history of vaginitis. She had no PROM related comorbidities, including hypertension, anemia, blood dyscrasias, endocrine disorders, immune system and neurological disorders. On examination her vital signs were stable, the uterus was soft, non tender and the size corresponded to her date. Sterile speculum examination confirmed the leaking of clear liquor with a positive Nitrazine test. On admission the following investigations were done, complete blood count showed white blood cells of $6.6x10^9$/l, hemoglobin 12.0 gm/dl, mid

stream urine culture was negative. Obstetric ultrasound scan showed single viable fetus with severe oligohydramnios. Biometry corresponded to 18 weeks and the estimated fetal weight was 280 gm.

The patient was kept in the hospital for conservative management after proper counseling. Prophylactic antibiotic with Amoxicillin was started. The temperature chart, and the bi-weekly complete blood counts and microbiological screening for infections remained normal. Patient was put on prophylactic doses of subcutaneous Heparin. Serial ultrasound scans showed the presence of progressive fetal growth despite of persistent marked oligohydramnious. At 31 weeks the scan revealed re-accumulation of liquor and at 35 weeks the largest pocket of liquor was 2.3cm and there was a persistent Breech presentation. Under these circumstances, the patient was counseled on the need for an elective cesarean section. The consent of the patient and her immediate relatives was obtained. The neonatologist and anesthetist were duly informed and an elective cesarean section was performed. The outcome was a live male infant with an Apgar score of 5 and 9 at first and fifth minute respectively and the umbilical cord pH was 7.3. The birth weight was 1.945 kg. The patient was discharged in good health on the 6th post operative day, following removal of stitches on the previous day. She was advised to be seen in the post-natal clinic for follow up.

The baby was admitted into the neonatal intensive care unit (NICU) for further management. He was kept on room air. During the period of his stay in NICU, the baby was found to be free of any respiratory distress, intra ventricular hemorrhage, neonatal sepsis, malformations and necrotizing enterocolitis. The chest examination revealed good air entry bilaterally. He tolerated oral feeding from day one. However, as a precautionary measure Intravenous antibiotics were started. The baby was discharged in good health on day 9 following antibiotics therapy and phototherapy for neonatal jaundice.

Subsequently the baby was followed in pediatric clinic for four years. Periodical physical examination and laboratory investigations revealed him to progress in all the parameters of growth.

DISCUSSION

The case was observed to have premature rupture of fetal membrane at week 19 which became the basis for the preterm delivery at week 35. The exact mechanism of premature rupture of the membrane is not known. However, cytological evidence indicate the following conditions: (a) the membrane at the rupture point is reduced in thickness (b) the intercellular canals near the implantation site becomes dilated and branched (c) the trophoblast layer of the membrane becomes thin and has more degenerating cells (d) the fibroblast and spongy layers have few collagenous fibers and less organization near the rupture site. These findings suggest that, although cellular activity is maintained in prematurely ruptured membranes, the collagenous extra cellular matrix undergoes marked disorientation. If this occurs too early in gestation, it may lead to premature rupture[9].

Symptoms of persistently marked oligohydramnios were observed in the present case. Generally, amnioinfusion is used to prevent the poor prognosis of the condition. However, the present study avoided the infusion because of its proven fetal anomalies[6]. Nevertheless, in an earlier study, Mino et al[10] found prophylactic amnioinfusion to improve neonatal metabolic state when used in labor induction of term pregnancies with PROM and a low amniotic fluid index. The discrepancy in the two observations may be the timing of infusion in the latter case.

Notwithstanding, the increased risk for pulmonary hypoplasia[11], we adopted the design of expectant management, as this management has been reported to increase the survival rate of infants[12]. Infectious morbidity in patients with PROM is an important risk factor for obstetrical and neonatal complications[13]. The administration of antibiotics after PROM is associated with a prolongation of pregnancy and a reduction in maternal and neonatal morbidity[14-16]. These data support the use of Amoxicillin treatment upon confirmation of PROM in the present study. The patient was also kept on prophylactic doses of subcutaneous Heparin, to avoid risk of DVT[17].

Although preterm birth due to PROM is associated with respiratory distress, intra ventricular hemorrhage, hypoxic-anoxic encephalopathy, aspiration pneumonia, neonatal sepsis, malformations and necrotizing enterocolitis[18], the baby observed in the present study was free of all these abnormal symptoms which are often associated with preterm neonates born due to PROM. In addition to timely detection, prompt laboratory investigations, scrupulous patient care and meticulous management of infections, illness and hyperbilirubinemia lead to a favorable outcome. Subsequent care of the baby in the Neonatal Intensive Care Unit (NICU)

and good oral feeding from day 1 might have influenced the normal progress of the baby.

CONCLUSION

The initial assessment of this case with PROM revealed clinical stability of the mother and fetus. This provided the perseverance to restore the damage by conservative management. This followed prompt laboratory investigations, meticulous patient care and scrupulous management of infections, illness and hyperbilirubinemia to increase the duration of pregnancy and attain stability of the fetus. This resulted in a favorable outcome.

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