

Selective termination in discordant twin pregnancy with early onset preeclampsia: case report

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Summary

Objective: To study the effectiveness of selective termination for discordant twins in treating early onset preeclampsia. **Materials and Methods:** After literature review, ethical review, and discussion with the couple, one patient with early onset preeclampsia complicated with a lethal condition in one twin, was performed selective termination by intracardiac injection of potassium chloride at 27 weeks' and four days' gestation in an effort to reverse preeclampsia and prolong the pregnancy. **Results:** The clinical manifestation of preeclampsia was alleviated in this patient. At 29 weeks, the stillborn fetus was delivered because of spontaneous preterm labor. A live birth was achieved five days later. All procedures allowed continuation of the pregnancy for an additional two weeks and one day of the remaining fetus. **Conclusion:** Selective termination may be an option for treating early onset preeclampsia in discordant twins, instead of termination of whole pregnancy.

Key words: Dichorionic pregnancy; Early onset preeclampsia; Discordant twins; Selective termination; Delayed-interval delivery.

Introduction

Preeclampsia is associated with fetal growth restriction. The management of severe pre-eclampsia focuses on prevention of seizures and control of blood pressure, but the ultimate method remains to terminate the pregnancy. Twin pregnancy is one of the high risk factors for preeclampsia. Some twin gestations with preeclampsia are in the extremely immature period and complicated restricted fetal growth of only one fetus. In these cases, pregnancy termination is accepted to resolve the maternal illness and results in poor neonatal outcome for both twins. The authors explored an alternative treatment in the management of these pregnancies that might improve survival of the normal developing twin.

Case Report

A 24-year-old woman conceived dichorionic twins naturally, gravida 2, para 0. Gestational age was determined by ultrasound. Normal nuchal translucency and growth in twins were shown by ultrasound at 12 weeks' gestation. Serum screening at 16 weeks' gestation was normal. Ultrasound showed twin A appropriate for gestational age (AGA) and twin B lagging by three weeks with oligohydramnios at 20 weeks' gestation and no anatomic abnormalities on either twin. Gestational diabetes was revealed by oral glucose tolerance test (OGTT) at 24 weeks.

At 26 weeks' gestation, the woman developed pre-eclampsia, and was hospitalized with a blood pressure of 180/100 mmHg, proteinuria (5.48 g/24 hours) and elevated serum transaminases (aspartate aminotransferase [AST] 54 U/L, alanine aminotransferase [ALT] 72 U/L). Ultrasound showed twin A AGA, twin B anhydramnios and absent end diastolic velocity in the umbilical artery with growth less than 3 percentile. Magnesium sulfate and calcium channel

blocker (nifedipine gastrointestinal therapeutic system (GITS) 60 mg oral per day) were used to control pre-eclampsia. Dexamethasone (12 mg/d in divided doses) was given for fetal lung maturation. The poor prognosis of the restricted twin was discussed with the parents and they decided the expectant management.

During expectant management, the woman complicated with developing preeclampsia as serum transaminases elevated (AST 122 U/L, ALT 180 U/L), proteinuria increased (from 5.48 g to 6.99 g/24 hours). Ultrasound evaluation revealed no growth of twin B, still absent end diastolic velocity in the umbilical artery and severe oligohydramnios, while evaluation of twin A was reassuring.

The couple was counseled of the poor prognosis for the restricted twin and selective termination of twin B as an option to prolong the pregnancy on behalf of twin A. After detailed informed consent, the procedures was performed by the transabdominal intracardiac injection of potassium chloride into twin B at 27 weeks' and 4 days' gestation.

After selective termination, the symptoms of pre-eclampsia alleviated. Oral nifedipine GITS was decreased to 30 mg per day and diastolic blood pressure was stable, the proteinuria decreased to 3.56 g/24 hours at 29 weeks. She had spontaneous preterm labor occurring at 29 weeks and a stillborn girl weighing 550 g was delivered. Thirty minutes after delivery of this twin, the umbilical cord was ligated as high as possible in the cervix under aseptic conditions. Ritodrine was performed as prophylactic tocolysis. Ceftezole (one g iv three times per day for five days) was administered. Vital signs, complete blood counts, C-reactive protein, and coagulation studies were normal afterwards. Fetus was monitored by non-stress test (NST), ultrasound, and umbilical artery Doppler. No clinical signs of chorioamnionitis were noted.

At 29 weeks and five days, a 1,300 g female neonate was delivered vaginally with Apgar scores of 9 at one minute and 9 at five minutes because of spontaneous labor. The neonate received full resuscitation and immediate life-support intervention and was transferred to NICU. Macroscopic and histologic examination of

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the placenta confirmed a dichorionic pregnancy, with velamentous insertion of umbilical cord in twin B.

The postpartum recovery of the mother was uneventful and was discharged four days later after delivery. The neonate was given pulmonary surfactant because of respiratory distress syndrome. Two days after birth, the neonate presented progressive dyspnea and was diagnosed with patent ductus arteriosus (PDA) by echocardiography. Then ibuprofen was given to close the PDA. The neonate died five days after birth because of massive pulmonary hemorrhage.

Written informed consent was obtained from the patient for publication of this case report.

Discussion

Preeclampsia remains a major cause of maternal mortality worldwide with adverse perinatal outcomes. Twin gestations occur in 3.26% of pregnancies and the risk of preeclampsia in twin pregnancies has been shown to be more than twice that in singleton gestations [1, 2]. Treatment in preeclampsia is aimed to prolong pregnancy and prevent severe maternal complications, until now still focuses on blood pressure regulation, seizure prophylaxis, and monitoring fetal condition. However the ultimate method remains delivery of the fetus and placenta. Because of the high maternal morbidity and the extremely low perinatal survival rates, expectant management in severe preeclampsia is not recommended in cases of less than 24 weeks and/or in those with severe fetal growth restriction at any gestational age < 26 weeks [3].

In this case, the patient complicated with developing preeclampsia and with worsening condition of the restricted twin during the expectant management. Termination of the pregnancy would resolve the maternal condition and affect the co-twin's survival. To the authors' knowledge, multifetal reduction to a singleton was associated with higher birthweights and lower rates of preterm deliveries [4]. They hypothesized that preeclampsia might be reversed by selective termination of restricted twin in this case. They investigated the database of Cochrane Library, PubMed, EMBASE, *et al.* and found several reports published about resolving preeclampsia by selective fetocide of the abnormal twin. Audibert *et al.* reported the first case of resolution of preeclampsia after selective termination of the worsened twin at 32 weeks' gestation and the pregnancy was uneventful until delivered at 38 weeks [5]. Heyborne *et al.* reported three patients with second trimester preeclampsia treated with selective fetocide of the twin in lethal condition. Preeclampsia resolved in all three patients, allowing an additional 9 to 23 weeks before delivery of the remaining fetus [6].

In the present case, after the authors performed the selective termination of the restricted twin, severe preeclampsia was alleviated and allowed the pregnancy to continue for an additional two weeks and one day before delivery of the AGA fetus. Although there are few cases in the literature about the selective termination to the restricted twin, the present case further confirmed that selective termination may

be an option for treating early onset preeclampsia in discordant twins, instead of termination of whole pregnancy.

In the present case a delayed interval of five days was achieved between delivery of the dead fetus and retained fetus after selective termination. Delayed delivery in multiple gestation is of very rare occurrence. While it is decided, the cord of the first born twin should be ligated under aseptic conditions with an absorbable suture, as close to the cervix as possible. Prophylactic tocolysis may be used after first twin's birth, or later during uterus contractions with no evidence of chorioamnionitis [7]. Antibiotics should be provided immediately after the birth of the first child. There is no clear indications for the use of prophylactic cervical cerclage [8]. Therefore, the authors did not perform cerclage after the still-born fetus was delivered.

Although the neonate in the present case died by massive pulmonary hemorrhage complicated with PDA, based on the literature and the authors' experience, selective termination may be an option for treating preeclampsia in discordant dichorionic twins in an effort to prolong the pregnancy, instead of termination of whole pregnancy. Further studies are required for a better understanding of the pathophysiological mechanisms of this procedure.

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