Successful management of a high-risk pregnancy with polyhydramnios, IUGR and recurrent pregnancy loss in a chronic renal failure patient: a case report

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Summary

Pregnancy in patients with chronic renal failure occurs rarely but the incidence is increasing. The successful management of a 38-year-old woman suffering from chronic renal failure is discussed.

Key words: Chronic renal failure; Pregnancy; IUGR; Polyhydramnios.

Introduction

Pregnancy in chronic renal failure patients is known to occur rarely, but the incidence is increasing. In 1961 Theil *et al*. reported the use of hemodialysis in a pregnant woman for the first time [1] and in 1971 Confortini *et al*. reported the first successful pregnancy with chronic hemodialysis [2]. In 1980 the European Dialysis and Transplant Association (EDTA) reported the incidence of the pregnancy with chronic hemodialysis as 0.9% [3]. Recent publications report the incidence as 1-7% [4-10].

The knowledge and experience on the management of these patients is growing and chronic renal failure and hemodialysis are no more an exact contraindication for pregnancy.

Here, we present a case report of the successful management of a high-risk pregnancy with polyhydramnios, IUGR and with a history of recurrent pregnancy loss in a chronic hemodialysis patient.

Case Report

The patient, a 38-year-old woman, was gravida four, para two with no surviving infant and a history of previous therapeutic abortion. She was referred to our clinic at the 22nd week of gestation with a live singleton pregnancy. The patient had had chronic renal failure for 18 years secondary to an inaccurate blood transfusion in her first delivery due to maternal shock and hypoxia which occurred after she gave birth. Since then she had been on hemodialysis and the regimen was adjusted to three times per week and three hours a day.

She had conceived three times in the past – 18, 17 and six years prior to the present pregnancy. The first was delivered at term spontaneously via the vaginal route and the newborn died of perinatal asphyxia at postpartum day 14. A therapeutic abortion was suggested for her second pregnancy by her nephrologist at the 12th week of gestation. She agreed with her doctor and the pregnancy was terminated. The third was delivered via cesarean section at the 32nd week of gestation and the infant died of prematurity in the NICU at postpartum day 60.

She had been strictly advised by her nephrologist not to conceive again due to the high risk of an unsuccessful pregnancy outcome, however she conceived unintentionally. She was not followed-up until she came to our clinic at the 22nd week of gestation. She had not had first or second trimester screening tests before but a detailed songraphic examination of the fetus was normal at the initial exam. She also had a history of hepatitis C positivity.

She was hospitalized for antenatal and nephrologic follow-up and adjustment of time in dialysis sessions, changes in dialysis regimen, blood pressure control and observation of medical complications, and maternal and fetal complications. The nephrologist and the obstetrician followed the patient collaboratively. The length and frequency of hemodialysis sessions were determined according to prerenal BUN values which were supposed to be lower than 50 mg/dl. Dialysis was performed using a high efficiency or high-flux dialyzer, and with volume-controlled ultrafiltration. The value of Kt/V was calculated according to the formula: Kt/V= 1.2-1.4 In(CO/CF)3. Erythropoietin was administered subcutaneously 4000 IU twice a week. A prescription of low molecular weight heparin without a loading dose was used. It was started at 4000 IU and then increased to 6000 IU. Hemodialysis sessions were adjusted to six times per week and six hours a day. The previous regimen was not sufficient due to increased plasma volume during pregnancy. Her predialysis BUN levels ranged between 32-47 mg/dl, predialysis serum creatinine levels ranged between 1.77-8.27 mg/dl and predialysis serum potassium levels ranged between 2.7-4.9 mmol/l during pregnancy. Once her platelet counts were 47,000/ul, but her bleeding time was 2.5 min and her clotting time was 3.5 min which were normal. Platelet counts ranged between 54,000-134,000/ul during pregnancy.

Obstetric surveillance was performed tightly and involved measuring of maternal blood pressure every day and continuous fetal heart rate monitoring immediately after each hemodialysis session. Fetal growth was monitored by ultrasonography every week.

Polyhydramnios was detected at the 24th week of gestation and AFI was measured over 24 mm. The mean peak systolic to end-diastolic (SD) umbilical artery ratio was measured as 3.96. Fetal biometry was compatible with gestational age. Fetal echocardiography which is performed to find out if the etiology of polyhydramnios was normal. A 50-gram oral glucose loading

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test which resulted higher than the cut-off value of 140 mg/dl was administered at this time. Then a 100-gram oral glucose tolerance test was performed which resulted as normal. Regular uterine contractions on tocogram were detected at 25 weeks of gestation and a tocolytic agent (nifedipine) was administered to prevent preterm labor as 6 x 40 mg per os per day. Betamethasone 1 x 12 mg was given twice on consecutive days to provide fetal lung maturation. Amnioreduction was performed to relive symptoms of preterm labor due to AFI which measured 24 mm and the uterus was distended. After the amnioreduction, AFI was measured as 16 mm. Genetic analysis was performed on obtained amniotic fluid sample and resulted as a normal karyotype, 46 XY. Indomethacin was also administered to reduce polyhydramnios at a dose of 4 x 50 mg rectally per day. The following day preterm labor was relieved and nifedipine was stopped.

Fetal biometric measurements were found two weeks smaller according to the gestational age at the 27th week of gestation and AFI was measured as 8 mm which was almost oligohydramnios. Indomethacin was urgently stopped. Loss of end-diastolic flow was detected but no reverse flow on umblical artery Doppler velocimetry. The ductus venosus Doppler was normal.

At the 28th week during sonographic examination the AFI returned to normal, the EFW was 47%, and the umbilical artery Doppler was SD: 5.3.

At the 29th week the AFI was normal, the EFW was 28% and there was sometimes reverse end diastolic flow in the umbilical artery Doppler, but the ductus venosus Doppler was normal. The NST measures were reactive, but there were some irregular contractions and 6 x 10 mg nifedipine was started. At the 30th week false labor ended. The AFI was normal, the EFW was 27% and end diastolic flow in the umbilical artery Doppler was absent, but there was no reverse flow and the ductus venosus Doppler was normal. The patient continued to be followed strictly. AFI returned to normal, estimated fetal weight was in the 47th percentile and umblical artery Doppler SD ratio was 5.3 at the 28th week of gestation.

At the 29th week of gestation, AFI measured normal and EFW was in the 28th percentile. There was reverse end-diastolic flow on umblical artery Doppler velocimetry from time to time but ductus venosus Doppler velocimetry was normal. NST was reactive, but irregular contractions were detected on tocogram and nifedipine was administered again to prevent preterm labor at a dose of 6 x 40 mg per os. Uterine contractions disappeared at the 30th week of gestation. At this time, AFI measured normal, EFW was in the 27th percentile and there was loss of end-diastolic flow but no reverse flow on umblical artery Doppler velocimetry. Ductus venosus Doppler was still normal.

Until the 33rd week of gestation, the patient was followed-up with a biophysic profile, EFW, AFI, umbilical artery and ductus venosus velocimetry measurements twice a week and NST twice a day. EFW was decreased to the 10th percentile at last. AFI measured normal, but there was still a loss of end-diastolic flow but no reverse flow on umblical artery Doppler, and ductus venosus Doppler was normal at this time. NST was reactive but regular and effective uterine contractions were detected on tocogram and active vaginal bleeding showed up under tocolytic agent medication at the 33rd week of gestation. These findings were interpreted as preterm labor and due to the patient having had a history of previous c-section, we decided to perform cesarean section and deliver the baby. A healthy 1,460 g male baby was delivered by c-section. The 5th min Apgar score was 6. The baby was followed-up in our NICU to be observed for 11 days and then he was discharged with no sequels as a 1,680 g healthy baby.

Conclusion

Most dialysis-dependent women are older in age and in preserving their fertility they have sexual dysfunction because of hormonal, neurologic, and vascular changes, such as physical causes and stress, depression and emotional states as psychosocial causes which reduce sexual desire [11-13]. Gipson *et al*. reported that women undergoing chronic hemodialysis have poor desire and a decreased frequency of sexual relations [13]. They may also have atrophic vaginitis as a result of low estradiol levels. Erythropoietin has a positive effect on well-being, increases sexual desire by the pituitary-adrenal and pituitary gonadal axis [11-17], and is related with the return of normal menstruation periods [14, 18].

There are some common and important risks in these patients. The majority of the complications are spontaneous abortions in the second trimester – 21% [19], intrauterine growth retardation, polyhydramnios [20], prematurity because of obstetric complications affecting 83% of all live births and 79% of surviving infants [19, 20], maternal hypertension [18, 20], preeclampsia and neonatal death as a result of the increased incidence of preterm delivery and its associated complications [20].

Dialysis doses are extremely important for the newborn's weight and the survival [2]. Thus the aim of therapy is to increase the time and frequency of the hemodialysis and to decrease the rapidity of ultrafiltration in order to achieve predialysis blood urea nitrogen (BUN) as less than or equal to 50 mg/dl [20].

In dialysis-dependent women, pregnancy is usually diagnosed late at about 16 weeks on average because of irregular menses and routine abdominal complaints and they are not considered to be pregnant [5, 14, 21-25]. Thus it is also important to diagnose pregnancy earlier as to increase hemodialysis doses.

The number of successful pregnancies seem to be more increased than in the past. In 1980 the EDTA reported success rates as 23% [3]. In 1992 Souqiyyeh *et al*. reported success rates of 42% in Saudi Arabia [4]. In 1996 Toma *et al*. reported a 48.6% success rate in Japan [8]. After 1990, Hou *et al*. and others reported success rates at over 50% [5, 7-9, 21, 26-29].

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