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Successful Pregnancy in a Chronic Hemodialysis Patient

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Abstract

Pregnancy in end stage renal disease women who are on Hemodialysis has been considered a challenging event for both mother and fetus. Generally, outcomes of pregnancy in patients with end-stage renal disease (ESRD) have been considered to be extremely poor, and pregnancy in this group of patients is rather scarce. The frequency of conception is ranged from 0.3% per year in Belgium to 1.4% per year in Saudi Arabia. Based on data, about 50% of these conceptions are lead to surviving infant finally. Although there is higher prevalence of adverse effects of pregnancy on maternal and fetal outcome in these groups of patients, they can be managed by tight control of patient condition and intensive dialysis. Suitable pharmacological strategies also help to achieve success. We present a young woman with frequent unsuccessful conception in a long duration dialysis who finally had a successful pregnancy with a surviving infant in our center.

Introduction

Generally successful pregnancy that leads to an alive and normal infant is rare in ESRD patients (1). The frequency of conception is ranged from 0.3% per year in Belgium to 1.4% per year in Saudi Arabia (2). Based on data, about 50% of these conceptions lead to surviving infant finally. Although there is higher prevalence of adverse effects of pregnancy on maternal and fetal outcomes in this group of patients, they can be managed by tight control of patient condition and intensive dialysis. Suitable pharmacological strategies also help to achieve success (3).

Case report

The presented case is a 35-year-old pregnant woman G7P4A2L3 who was on hemodialysis for 14 years. She did not have history of conception during the last 15 years. Her BMI before pregnancy was 19.56kg/m^2. Her pregnancy was diagnosed at 9 weeks of gestation as she declared exacerbation of early morning nausea and it was confirmed by β HCG test, that at that time its level was reported 1500 IU/Lit (>20 : positive). Her pregnancy was confirmed by uterine ultrasonography that revealed a 9- week live fetus. Then, she screened for fetus aneuploidy and anomaly screening. PAPPA (pregnancy-associated plasma protein A) and free β HCG (Human chorionic gonadotropin) in the first trimester were higher than normal (294 ng/ml and 34mg/l respectively). Therefore, based on the results, the possibility of Down syndrome and trisomy 18 were considered low. In the second trimester, other screening tests including MS-AFP (Maternal

testing for fetal screening), uE3 (unconjugated Estriol 3), total hCG and Inhibin-A were done. As the results of screening tests were negative and the result of detailed anomaly scan was normal, amniocentesis was not done. She did not have any problem during the pregnancy. Her blood pressure was controlled properly (ranged 120/80 to 135/90) with daily administration of 10 mg Amlodipine and 750 mg Methyldopa. However, before the diagnosis of pregnancy, she had also taken 50 mg metoprolol that was discontinued. It should be noted that she did not have any residual renal function. Daily hemodialysis with a total of 15 hours in week was carried out for her. Dialysis adequacy was calculated by KT/V ratio that ranged from 1.04 to 1.62 during the pregnancy. Her laboratory data during pregnancy have been presented in table 1. She received two sessions of supportive psychotherapy and was doing well until the delivery. After 32 weeks of pregnancy, she was checked by a perinatalogist once every two weeks that showed gradual decrease of the fetal growth and increased resistance in umbilical artery , reduction in a wave in ductus venousus and high resistance in MCA in fetal ultrasounds scan that all were compatible with severe intrauterine growth restriction (IUGR) necessitating termination of pregnancy. She was admitted to hospital and received steroid prophylaxis for fetal lung maturity. The patient had an emergency caesarean section and gave birth to a 800g live male infant with Apgar scores of 1, 2, and 8 at 1, 5, and 10 minutes. Four days after the delivery, she had a seizure attack associated with a rise in blood pressure that was controlled well and all brain MRI and laboratory evaluations were almost in normal conditions. Although there was no recurrence, she received anticonvulsants drugs.

Table 1. Laboratory data of patient during the pregnancy

	Before pregnancy	First trimester	Second trimester	After Delivery
Hb (g/dl)	11. 4	9. 7	13. 8	12
WBC (*10^3/L)	6600	6100	9400	7600
PLT(*10^3/L)	109000	110000	101000	129000
FBS (mg/dl)	80	80	77	82
KT/V	1. 1	1. 26	1. 12	1. 23
URR(%)	77%	66%	62%	68%
Cr(mg/dl)	8. 5	6. 3	8	9. 5
FERRITIN(ng/ml)	420	1035	169	147
PTH(pg/ml)	27	80	88	366
S Iron (mcg/dl)	37	58	85	856
TIBC (mcg/dl)	209	407	366	1191
Na (mEq/L)	142	131	132	137
K(mEq/L)	6	4. 7	6	5
Ca(mg/dl)	6. 5	8. 8	8. 2	9. 2
P(mg/dl)	4. 2	4. 1	4. 9	4. 8
AST (IU/L)	0	27	25	18
ALT(IU/L)	14	15	12	6
Alp(IU/L)	294	272	326	405
Alb (g/dl)	9	3. 8	3. 7	4. 4
Chol(mg/dl)	150	210	217	170
TG(mg/dl)	40	85	83	67

The baby was admitted to the intensive care nursery where he continued to progress well. Now, he is 18 months old and his weight is 12700kg. His growth is in normal range. Anticonvulsant drugs were tapered and discontinued 6 months after the delivery.

Discussion

According to some texts, pregnancy is rare in hemodialysis patients and successful delivery is uncommon (3). In average, the frequency of pregnancy in hemodialysis patients is about 0.5% per year (4). Conception is more common in hemodialysis patients than in peritoneal dialysis patients (4). About, half of pregnancies lead to live infants in this group of patients (5).

Diagnosis of pregnancy is delayed as amenorrhea is common in this group of patients. The average time of diagnosis is about 16. 5 weeks (4). It was the same in our patient whose pregnancy was diagnosed at 9 weeks of gestation. Although there are false negative and positive results for β-HCG test in this group of patients (5), it can be used for diagnosis and urine Gravindex test, even if the patient is not anuric, is not reliable (4). Our patient was anuric and β-HCG test confirmed the diagnosis. It should be noticed that since serum level of β-HCG in dialysis patients is higher than the expected level in that gestational age, uterine ultrasonography is needed for determining the gestational age (4).

In previous studies, it is recommended to adjust dialysis dose during pregnancy by patient condition not Kt/V number (4). About 20 years ago, researchers recommended every other day dialysis with longer sessions (7), but these days daily short dialysis is more acceptable (4). Our patient underwent daily 2.5- hour dialysis (6 times in week). However, her Kt/V per dialysis session was about 1.04 to 1.62 that is a little bit lower than the accepted amount in some months, but in average was 1. 33 that was acceptable and her pregnancy was successful.

In this group of patients, as the serum levels of HCG and alfa-Feto protein may be falsely higher than normal, amniocentesis and karyotyping for diagnosis of Down's syndrome and Trisomy should be done (4). However, in our patient theses test were in normal range and amniocentesis was not done.

Our patient did not have any problem during pregnancy, but in 32 weeks, due to the diagnosis of IUGR, she underwent cesarean section and gave birth to a premature baby. According to the literature, about 80% of infants from end stage renal disease mothers are premature. This prematurity may be due to hypertension in mother, premature labor, and fetal distress (4). The baby was SGA (small for gestational age) that is common in infants of dialysis patients. The reason for SGA is maternal azotemia or hypertension (4).

In end stage renal disease patients who are in dialysis, outcome of pregnancy is the same in both hemodialysis and peritoneal dialysis; however, as increase in dialysis dose is easier in hemodialysis, it is a preferred method (7-9). It is not recommended to change the method of dialysis after the diagnosis of pregnancy (9). For this, hemodialysis was continued in our patient.

A successful pregnancy can be occurred in dialysis patients. However, it needs cooperation of a nephrologist, gynecologist, dialysis ward nurses and also a psychologist can help the team to improve the patient's condition.

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