

*Case report***Successful Pregnancy in a Patient Despite Late Diagnosis of and Stage Renal Disease**Sengul Erkan¹, Dogruoz Ahmet², Caliskan Eray³, Tuncay Mehmet⁴, Gunlemez Ayla⁵ and Yilmaz Ahmet⁴¹Department of Nephrology, ²Department of Obstetrics and Gynaecology, Derince Education and Research Hospital, ³Department of Obstetrics and Gynaecology, ⁴Department of Nephrology, ⁵Department of Pediatrics, Neonatal Intensive Care Unit, Kocaeli University School of Medicine, Kocaeli, Turkey**Abstract**

Fertility is markedly decreased in women on dialysis. Fetal and maternal complications such as premature delivery, polyhydramnios, premature membrane rupture, maternal hypertension are increased, and the percentage of successful pregnancy is around 50 %. It has been suggested that following of the recommendations for pregnant patients on dialysis and multidisciplinary management of patients by nephrologist, obstetrician, neonatologist may improve the outcome of pregnancy. We report here a successful pregnancy in a patient despite late diagnosis of end stage renal disease.

Keywords: dialysis; fetal outcome; pregnancy

Introduction

Sexual dysfunction including infertility is very common observed in patients with chronic kidney disease (CKD). This is primarily due to alterations in the hypothalamic pituitary axis. Hormonal changes including prolactin, gonadotropins, and gonadal hormones are often seen. Furthermore, vascular, neurologic, psychogenic factors, anemia, hyperparathyroidism, and medications are the other risk factors for sexual dysfunction [1]. As a result, the frequency of pregnancy in these patients is lower than that in women of similar age in the general population. The risk of fetal and maternal complication is high. There is an increased risk of prematurity, intrauterine growth retardation, polyhydramnios, preterm prelabor membrane rupture, and maternal hypertension. Only half of pregnancies in women on dialysis results in a surviving infant. They usually have low birth weight and need to be admitted to neonatal intensive care unit (ICU) [2-5]. We report here a case of successful pregnancy in a patient with late diagnosis of end stage renal disease at 24th week of pregnancy.

Case report

A 22 year old female at her 24th week of gestation was referred to nephrology clinic with oliguria, bilateral lower extremity edema, increased blood urea nitrogen (BUN), and creatinine levels. She had a history of bilateral nephrolithiasis since her childhood. On admission, she was normotensive with 110/70 mmHg. Her heart rate was 81 beats/min, and body temperature was 36.8 °C. She looked pale, and there was 2 + edema on bilateral lower extremity. Laboratory work-up revealed the following levels: BUN, 144 mg/dl; creatinine, 15.8 mg/dl; potassium, 5.14 mEq/l; calcium, 7.5 mg/dl; phosphate, 4.7 mg/dl; magnesium, 2.8 mg/dl; parathyroid hormone, 235 pgr/ml; uric acid, 9.8 mg/dl; albumin, 2.8 g/dl; hemoglobin, 6 g/dl; white blood cell, 11.170/mm³; platelet count, 203.000/mm³. Abdominal ultrasonography showed bilateral increased renal parenchymal echogenicity (grade 3), bilateral nephrolithiasis, and pelvicaliectasis. Tunneled double lumen catheter was inserted to right internal jugular vein, and hemodialysis (HD) was initiated. Duration of dialysis was 24 h/week (4h x 6 days/week). A polysulfone high flux dialyser (surface area, 1.4 m²) and Fresenius 4008 S machine was used on dialysis sessions. Heparin was administered for anticoagulation. Reprocessed membranes were not used. Her blood flow rate was 300 ml/min. Ultrafiltration at each session was adjusted to her physical examination, blood pressure (BP), and an expected weight gain during progression of the pregnancy following discussion with obstetricians. Dialysate solution included standart bicarbonate with glucose, potassium 3 mEq/l, and calcium 2.5 mEq/l. Her BP was monitored every 15-30 min during every session. Erythropoietin was administered 300 U/kg/week. Iron sucrose (100 mg) was used intravenously three times weekly. Folic acid and water soluble vitamins were continued orally. Her dietary protein intake was liberalized. She did not need to use any antihypertensive drugs for BP regulation. Fetal growth and development was

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closely monitored by obstetricians. During the follow-up period, BP was more or less 120/80 mmHg, and laboratory results were as follows: BUN, 15 mg/dl; creatinine, 1.5 mg/dl; potassium, 3.5 mEq/L; calcium, 8.5 mg/dl; phosphate, 2.9 mg/dl; albumin, 2.7 g/dl; hemoglobin, 9.8 g/dl. At the end of 32nd week of gestation, polyhydramnios was established. Corticosteroids were administered to increase surfactant synthesis and fetal lung maturation. A boy weighting 1700 g was delivered by caesarean section at 33rd week of gestation. Neonatal period was monitored by a neonatologist in ICU, and it was uneventful.

Discussion

Pregnancy is uncommon in women on dialysis, with the reported incidence of conception 0.9-7 % and associated with an increased fetal and maternal complications [5, 6]. Premature delivery is the most common complication. Polyhydramnios is another common complication. It probably results from the high placental BUN concentrations. Therefore, it has been suggested that intensified dialysis may decrease BUN level and the occurrence of polyhydramnios as well as the risk of prematurity. Hypertension is often seen in these patients, which may cause the termination of pregnancy. Preeclampsia and inadequate dialysis are the factors leading to hypertension, and sometimes it can be difficult to understand the reason of hypertension, especially in patients with anuria [2, 7]. Preterm prelabor membrane rupture, obstetric cholestasis, intrauterine death, arteriovenous fistula thrombosis, abruption placenta, acute pulmonary edema, postpartum hemorrhage are the other complications reported in these patients [4].

The rate of successful pregnancy in these patients has improved in recent decades, approximately half of the pregnancies result in infant survival. The improvement may associate with the prescription of dialysis, and the result of multidisciplinary management by nephrologist, obstetrician, neonatologist. The choice of dialysis mode in pregnancy is still controversy. It has been reported that conception is less common in peritoneal dialysis (PD) patients than in HD ones, however, with no significantly difference in the outcome of pregnancy between both groups [7]. Vazquez *et al* treated two female, who were diagnosed as CKD at 12 and 27 weeks of pregnancy, with PD. Both cases resulted in full-term delivery without neonatal complications and they concluded PD might be an acceptable therapeutic option for pregnant patients [8]. Toma *et al* reported that the rate of successful pregnancy in women who was renal transplant recipients was excellent (82.0 %) [5].

Haase *et al* managed five pregnant patients on HD with intensified hemodiafiltration, with an average 28.6±6.8 h/week. Mean gestational age at delivery was 32.8±3.3 weeks. All infants were alive. In four of the five patients, pregnancy was diagnosed late, after a mean of 17.8±5.2 weeks. Mean interdialytic urea levels was 36±14 mg/dl, hemoglobin was 10.7±0.5 g/dl [9]. Chou *et al* reported that there was no significantly difference

in the rates of successful delivery between women who began dialysis before pregnancy and those began dialysis during pregnancy. But, they found that the birth weight was greater to born women starting dialysis before conception than those starting dialysis after conception [7]. Another important factor affecting the pregnancy outcome is the follow-up of fetus. It has been suggested that intensive fetal monitoring by doppler ultrasound and fetal non-stress test is associated with a successful perinatal outcome [10].

There are some recommendations for dialysis management of pregnant patients to improve outcomes. These include to use of non-reuse, biocompatible, smaller surface area dialyzers; to prescribe of dialysis of four-six times and 20-24 h/week; to target predialysis BUN levels ≤ 45-50 mg/dl; to use of dialysate adjusted to serum chemistries, with bicarbonate 25 mEq/L, potassium 3-4 mEq/L; if required, to increase 50 % erythropoietin dose to maintain hemoglobin 10-11 g/dl; to use of iron, folate, water-soluble vitamins; to monitorize blood pressure to maintain maternal diastolic BP at 80-90 mmHg; to encourage maternal protein intake should be of 1.8 g/kg/d; to avoid maternal volum depletion and hypotension on dialysis [2].

We reported a successful pregnancy in a patient despite late diagnosis of end stage renal disease. The only complication was polyhydramnios, leading to the termination of pregnancy. Maternal complication did not occurred.

We conclude that a better outcome of pregnancy in women on dialysis may be obtained by multidisciplinary management of patient including nephrologist, obstetrician and neonatologist, besides following the recommendations for dialysis management in pregnant women.

References

1. Anantharaman P, Schmidt RJ. Sexual function in chronic kidney disease. *Adv Chronic Kidney Dis* 2007; 14: 119-125.
2. Holley JL, Reddy SS. Pregnancy in dialysis patients: A review of outcomes, complications, and management. *Semin Dial* 2003; 16: 384-388.
3. Hou S. Pregnancy in dialysis patients: where do we go from here? *Semin Dial* 2003; 16: 376-378.
4. Tan LK, Kanagalingam D, Tan HK, Choong HL. Obstetric outcomes in women with end-stage renal failure requiring renal dialysis. *Int J Gynaecol and Obstet* 2006; 94: 17-22.
5. Toma H, Tanabe K, Tokumoto T, Kabayashi C, Yagisawa T. Pregnancy in women receiving renal dialysis or transplantation in Japan: a nationwide survey. *Nephrol Dial Transplant* 1999; 14: 1511-1516.
6. Giatras I, Levy DP, Malone FD, Carlson JA, Jungers P. Pregnancy during dialysis: case report and management guidelines. *Nephrol Dial Transplant* 1998; 13: 3266-3272.

7. Chou CY, Ting IW, Lin TH, Lee CN. Pregnancy in patients on chronic dialysis: A single center experience and combined analysis of reported results. *Eur J Obstet Gynecol Reprod Biol* 2008; 136: 165-170.
8. Gómez Vázquez JA, Martínez Calva IE, Mendiola Fernández R, Escalera León V, Cardona M, Noyola H. Pregnancy in end-stage renal disease patients and treatment with peritoneal dialysis: report of two cases. *Perit Dial Int* 2007; 27: 353-358.
9. Haase M, Morgera S, Bamberg C, *et al.* A systematic approach to managing pregnant dialysis patients-the importance of an intensified haemodiafiltration protocol. *Nephrol Dial Transplant* 2005; 20: 2537-2542.
10. Bamberg C, Diekmann F, Haase M, *et al.* Pregnancy on intensified hemodialysis: Fetal surveillance and perinatal outcome. *Fetal Diagn Ther* 2007; 22: 289-293.