

A rare full-term delivery in a chronic peritoneal dialysis patient

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Abstract

We aimed to report the case of a 37 years old woman, caucasian, who got pregnant after seven months of dialysis initiation and had a full-term weeks successful delivery. We also reviewed and presented the reported cases of peritoneal dialysis pregnancies in the last 6 years. The patient started renal replacement therapy due to focal segmental glomerulosclerosis and chronic tubular nephritis. In the same year, she got pregnant and started pre-maternal care in the high-risk pregnancy program. Peritoneal dialysis prescription was adjusted according to the patient's tolerance and laboratory parameters. No complications occurred during the first and second trimester. In the first quarter of the third trimester, an antihypertensive drug was initiated for maintenance of blood pressure. She delivered a healthy baby via spontaneous vaginal at 39 weeks. Birth was induced due to the advanced pregnancy time and the risk of worsening arterial pressure. Our experience showed that peritoneal dialysis is a viable option during pregnancy according to the patient's residual renal function and promotes a successful pregnancy period with the correct adaptations on peritoneal dialysis prescription. Collaboration and support amongst family, nephrologist and gynecologist doctors, multidisciplinary team and the patient are crucial to ensure treatment quality and successful outcomes.

Keywords: Pregnancy; Chronic kidney disease; End-stage renal disease; Peritoneal dialysis.

Introduction

Pregnancy in women with advanced chronic kidney disease (CKD)

on dialysis is uncommon and has long been considered to be challenging to manage [1]. In a Japanese nationwide survey that obtained data from 1992

women of childbearing age receiving dialysis, pregnancy occurred only among women receiving hemodialysis. Twenty-five 25 pregnancies were reported for 20 women (0.25% per year) [2].

Although several successful cases have been reported in the latest years in hemodialysis (HD), a few were among women on peritoneal dialysis (PD) [3]. Compared to HD, PD offers specific benefits for the management of the pregnancy that include continuous daily ultrafiltration, better hemodynamic and metabolic balance, preservation of residual kidney function, less anemia, unnecessary systemic anticoagulation, and a more liberal diet [1, 4].

On the other hand, abdominal fullness, discomfort, catheter drainage difficulties and displacement, hemoperitoneum, and peritonitis, have also been described [5-7].

In general, pre-term delivery and infant low birth weight are the most common outcomes in the reported cases of patients on PD [3, 8]. In our literature search we found only one report of a full-term delivery in 2007 from Turkey and none report from Brazil.

We aim to report the case of a 37-years-old woman who got pregnant after seven months of dialysis initiation and had a full-term week's successful delivery. We also reviewed and presented the reported cases of PD pregnancies in the last 6 years.

Case report

A 37-year-old Caucasian woman with a history of hypertension has an obstetrical history that includes two prior spontaneous vaginal deliveries and one abortion in 2016 when was admitted to the hospital due to pulmonary sepsis with nephrotic syndrome and renal dysfunction associated.

Laboratory tests identified anti-cardiolipin antibody IGG and IGM positive, anti-nuclear factor positives and 11.7 g of proteinuria/24 h urine collection. Three months later, a kidney biopsy diagnosed focal segmental glomerulosclerosis (FSGS) and chronic tubular nephritis. Methylprednisolone pulse therapy was performed with no success, worsening kidney function and initiating renal replacement therapy.

She started HD through a central venous catheter in March 2017, and three arterial-venous fistulas were attempted, with thrombosis occurring in all of them. The patient was transferred to PD in June 2017, as an urgent start due to vascular access dysfunction. The patient maintained good residual renal function during PD follow-up and adequate clinical and laboratory parameters. In November of the same year, she got pregnant and started pre-maternal care in the high-risk pregnancy program.

This program consists of following up patients who are considered at high risk of developing

complications during pregnancy and must be seen by a specialized team every month. During her consultations, the obstetrician kept contact and discussed her clinical conditions every necessary time, the appointments were done monthly, and the routine pre-maternal evaluation was performed at every evaluation such as weight, measurements of uterine height, assessment of fetal heart rate, analysis of laboratory tests and adjustments to medications in use. Bi-weekly appointments were scheduled in the last trimesters and weekly last month.

PD prescription was adjusted according to the patient's tolerance and laboratory parameters (Table 1). No

complications occurred during the first and second trimesters. Towards her last trimester, an antihypertensive drug was prescribed to maintain optimal blood pressure. The birth was induced due to the advanced pregnancy time and the risk of worsening arterial pressure levels. She delivered a healthy baby via spontaneous vaginal at 39 weeks. The baby girl weighed 2.6 kg and had an APGAR 8/9.

PD was maintained until the day before birth and re-introduced 48 hours after birth. Patient and child were discharged 72 hours later. After 10 months (July 2019) she received a successful kidney transplant and is currently in good health.

Table 1. Peritoneal dialysis prescription and laboratorial details along the follow-up time.

	Dec/17	Feb/18	Mar/18	Apr/18	May/18	Jun/18	Jul/18	Aug/18	Sep/18	Sep/18	Oct/18	Nov/18
Pregnancy (Weeks)	-	8	13	17	22	27	31	35	38	39 (Birth)	-	-
Creatinine (mg/dL)	5.02	4.03	3.54	3.36	3.2	3.65	3.81	4.725	4.42	7.2	6.2	4.81
Urea (mg/dL)	-	-	-	-	40.3	57.5	57.9	66.65	73	-	-	69
PD fill volume (mL)	2,000	2,000	1,800	1,600	1,400	1,200	1,100	1,000	800	1,500	2,000	2,000

PD: Peritoneal dialysis.

Discussion and Conclusion

For dialysis patients, the likelihood of conception is low and even lower is the probability of having a successful pregnancy. However, we reported a rare case of an uneventful pregnancy and full-term delivery in a chronic PD 37 years old patient and hope it will contribute to the

management of pregnancy in patients receiving peritoneal dialysis.

The other full-term delivery in a PD patient was reported from Turkey by Altay et al. [5]. The 27-year-old woman had systemic lupus erythematosus and was undergoing PD for two years prior to pregnancy. Similar to our case, the fill volume was decreased as the pregnancy progressed

without adverse effects, and a hypotensive drug was introduced in the third semester [5].

In Table 2, we described the main characteristics and outcomes of reported cases of pregnancies during chronic PD treatment in the latest six years published in the English language (2015 to 2021). Previous cases (up to 2015) were reviewed by Batarse et al. [8] and by Piccoli et al. [3].

We found six case reports. Patient age varied from 27 to 42 years old, and they were on PD from 3 months to 3 years. Gestational week at delivery ranged from 27 to 37, and children weighed 1060 to 3005g [9-14]. Only in two cases HD during pregnancy was indicated, one combined with PD [12, 14]. In four cases C-section was

indicated, and patients were temporarily transferred to HD until complete cicatrization [9, 11-12, 14].

Although it is impossible to know the rate of successful pregnancies among dialysis patients because cases in the literature usually report successful events, our case reinforces that an uneventful pregnancy with full-term delivery is possible. We believe that the factors contributing to this successful outcome were the patient's preserved residual renal function, overall good clinical condition, and adherence to the treatment proposed by a multidisciplinary team formed by nephrologist, obstetrician, nurses, dietitian, psychology, social worker with a close and careful follow-up

Table 2. Reported cases characteristics and outcomes in pregnancies in chronic peritoneal dialysis (2015-2021).

Reference	Age	PD modality / vintage	Delivery type / week	Infant APGAR / weight	Indication for delivery	Transfer to HD?	Post-partum treatment
Alhwiesh et al., [13]	38	APD / 2 years	Vaginal / 37	7-8 / 1500 g	Uneventful induced	-	No PD
Ross, et al. [12]	27	CAPD / 3 years	C-section / 37	NR / 3005 g	Spontaneous labor	Yes, with APD	Interim HD
Lim et al. [9]	42	CAPD / 3 months	C-section / 36	7-8 / 2500 g	Elective	No	Interim HD
Malin et al. [10]	28	APD / 2 years	Vaginal / 34	NR / 1960 g	Polyhydramnios, erythropoietin hyporesponsiveness	No	PD
Choi et al. [11]	37	CAPD / 1 year	C-section / 27	7 / 1060 g	Fetal heart rate decreased	No	Interim HD
Shaw et al. [14]	32	APD / 1 year	C-section / 36	NR / 2635 g	Elective	Yes	Interim HD
Current paper	37	APD / 7 months	Vaginal / 39	8-9 / 2600 g	Advanced pregnancy time	No	PD

PD: peritoneal dialysis; APD: automated peritoneal dialysis; CAPD: continuous ambulatory peritoneal dialysis; HD: hemodialysis.

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