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Case Report

Pregnancy in End-Stage Renal Disease Patients on Hemodialysis: A Case Report from Resource Limited Setting

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ABSTRACT

It has long been recognized that pregnancy in women with chronic kidney disease presents unique challenges for both the mother and the developing child. The prognosis of pregnant chronic renal patients has improved over time, with an increase in the number of successful deliveries.

According to available data, the primary predictor of worsening residual kidney function and complications in pregnant women appears to be the stage of renal failure. Furthermore, in patients with end-stage renal disease, the likelihood of a successful pregnancy depends on appropriate depurative and pharmacological strategies.

Due to substantial improvements in antenatal and neonatal care, fetal outcome has improved considerably in the last four decades.

In this article we report a case of successful pregnancy managed at Myungsung Medical College/MCM comprehensive specialized hospital, Addis Ababa, Ethiopia.

Keywords: Obstetric fistulas; Vesicovaginal Fistulas (VVF); Rectovaginal Fistulas (RVF); Vesicouterine Fistulas (VUF); Hygiene

INTRODUCTION

Chronic kidney disease throws a wrench into the delicate dance of hormones, making conception a significant hurdle. Anovulation and disruptions in menstrual cycles become common, significantly impacting fertility. Even if conception occurs, the journey remains precarious.

Pregnancy in women with ESRD is a delicate balancing act, demanding expert care from both nephrologists and obstetricians. Increased risks loom large, threatening both maternal health with complications like preeclampsia and fetal well-being with concerns of preterm birth and low birth weight.

Since the first successful pregnancy in a dialysis patient in 1971 (Confortini P, 1971), a long road has been paved. Advancements in dialysis technology and prenatal care have led to improved outcomes, but significant challenges remain. The limited number of cases makes

large-scale studies difficult, relying heavily on case reports and series for guidance.

Recent data sheds light on how often women with End-Stage Kidney Disease (ESKD) get pregnant and have successful deliveries.

Australia and New Zealand: A registry showed a pregnancy rate of 2.07 per 1,000 patients per year between 1966 and 2008. Interestingly, peritoneal dialysis patients had lower rates (Shahir AK, 2013).

United Kingdom: Another registry found 1.4 pregnancies per 1,000 patients per year on dialysis between 2012 and 2014 (Wiles KS, 2018).

United States: A larger study revealed a much higher rate of 17.7 pregnancies per 1,000 patients per year on dialysis between 2005 and 2013. This rate was higher for hemodialysis compared to peritoneal dialysis (Shah S, 2019).

While US pregnancy rates for ESKD patients might not be increasing, delivery rates appear to be on the rise. For hemodialysis patients aged 18-45, delivery rates grew from 2.1 to 3.6 per 1,000 patients per year between 2005 and 2016.Peritoneal dialysis patients had lower and stable delivery rates around 1 per 1,000 patients per year (Oliverio AL, 2019).

Studies suggest that groups like white women, diabetic women, women who have been on dialysis for longer periods have lower pregnancy or delivery rates:

Understanding the unique challenges faced by pregnant women with ESRD is crucial. Continued research into effective interventions and ethical considerations in counseling are paramount. With ongoing efforts, the hope is to ensure that every journey towards motherhood, even amid complexities, has the chance to blossom into a healthy and fulfilling experience for both mother and child.

Here we report a rare case of a pregnant patient who had ESRD requiring dialysis.

CASE PRESENTATION

A 25-year-old Ethiopian female, primigravida woman, with a known history of type 1 Diabetes and hypertension. Etiology of ESRD is thought to be Diabetic nephropathy secondary to poorly controlled diabetes. The patient had initiated hemodialysis in December 2018 and was receiving three times a week maintenance HD with no significant problems.

Vascular access was native aortic valve fistula. 4 years after initiating hemodialysis, the patient reported approximately 6 weeks of amenorrhea. She was found to be pregnant after pelvic ultrasound was done. She also received multivitamin and folic acid throughout the pregnancy. Hypertension and diabetes remained a concern during this period, she was on Amlodipine and methyldopa prior to the pregnancy, and this was continued during pregnancy. Her BP averaged 110-140/70-90 mmghg. Patient's hemoglobin was maintained between 10-12 mg/dl she was also given iron supplementation to maintain iron saturation of 20% or greater per the hemodialysis unit's anemia and iron protocol. Cesarean section was performed at 32+3 weeks of gestation for an indication of severe oligohydramnios. She delivered a 1595g male infant with an uneventful neonatal period. Two years after, both mother and infant were in excellent condition (**Figure 1**).

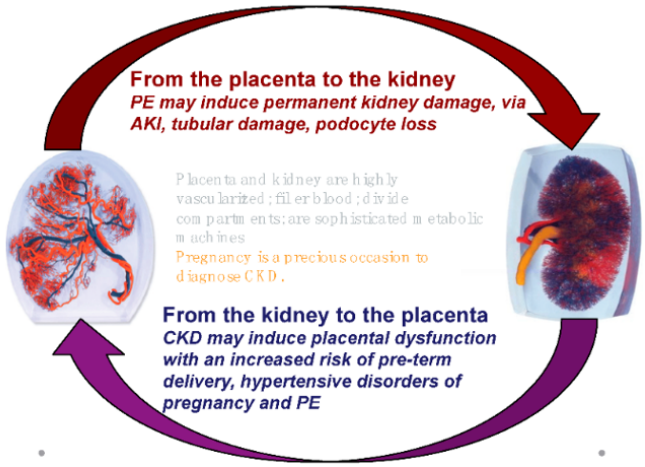

Figure 1. The placenta to the kidney PE may induce permanent kidney damage.

DISCUSSION

Pregnancy in women with advanced kidney disease has historically been associated with poor outcomes, including low live birth rates and high rates of prematurity. Early studies reported live birth rates ranging from 1-7% (Chao AS, 2002), with babies often being born prematurely, which negatively impacted their chances of leading healthy lives. Consequently, women on dialysis were advised against becoming pregnant.

However, recent observational studies have shown more promising outcomes for pregnant women with kidney disease, particularly those on different modalities of renal replacement therapy. For instance, a study by Luders et al. from Brazil reported a success rate of 87% in pregnant women on dialysis, attributing the positive outcomes to advances in the care of this patient population (Luders C, 2010).

A key factor contributing to successful pregnancies in women on hemodialysis is the implementation of increased and sustained dialysis dosing throughout gestation. This approach, which has been suggested since the 1980s, has recently led to improved outcomes, with viable infants being delivered. Dialysis protocols are now being developed based on factors influencing pregnancy outcomes to standardize care for this patient group.

Specifically, increasing the frequency and dosage of hemodialysis helps lower blood urea concentration and improves control of volume and blood pressure, which are crucial for maternal and fetal well-being. Adjustments to the patient's dry weight are also necessary to accommodate the growing fetus, with incremental increases recommended in the second and third trimesters. Excessive ultrafiltration should be avoided to prevent compromising fetal blood flow.

In addition to standard hemodialysis, nocturnal hemodialysis and peritoneal dialysis have also been used successfully in pregnant women with kidney disease. Nocturnal hemodialysis, in particular, has shown promising results, with reports of successful pregnancies and live births.

While some centers have reported successful outcomes with peritoneal dialysis as well, registry data indicate no significant differences in outcomes between hemodialysis and peritoneal dialysis for pregnant women with kidney disease.

Based on data published in the new millennium, the median birth weight was 1750 g and the median gestational age was 33.8 weeks. More than 40 percent of pregnancies end before 34 weeks; the preterm rate is 11.4% at less than 28 weeks, and the 28-day neonatal survival rate is 98% (Jesudason S, 2014).

CONCLUSION

Pregnancy in women undergoing dialysis presents significant challenges and risks, requiring a collaborative approach involving various healthcare professionals. It is essential for women of childbearing age with end-stage kidney disease to engage in shared decision-making when considering references family planning. A team consisting of nephrologists, high-risk obstetricians, neonatologists, dieticians, nurses, and social workers must work together to provide specialized care that has been shown in recent studies to improve the chances of live births. While there is a lack of long-term studies on the outcomes of mothers on dialysis and their babies, such research would enhance our understanding and ability to guide patients effectively.

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