

Case Report

Open Access, Volume 4

Safe delivery in a renal transplant patient: A case report and literature review

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Received: Dec 21, 2022

Accepted: Jan 10, 2023

Published: Jan 17, 2023

Archived: www.jcimcr.org

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DOI: www.doi.org/10.52768/2766-7820/2246

Abstract

In recent decades, organ transplantation has largely benefited from advances in immune suppressive therapy and surgical techniques. The reproductive function, alongside the patient's quality of life and survival, has also been improved. However, close follow-up for early detection of any renal injury is crucial, since the occurrence of acute rejection, dysfunction, or allograft loss, is unpredictable. In this work, we report a pregnancy follow-up and delivery in a renal transplant recipient. Our reported case is a 35-year-old patient (G1P0), who has a history of renal transplantation, 6 years ago, undergoing immunosuppressive therapy based on Azathioprine 50 mg per day and tacrolimus monohydrate 1 mg per day. She was admitted to our department (Gynecology and Obstetrics department) at 39 weeks and 3 days of amenorrhea. Fetal ultrasound, amniotic fluid and Doppler evaluation of the umbilical artery were normal. Evaluation of the transplanted kidney identified a normal kidney and vascular anastomosis. We have performed a cesarian section and the patient gave birth to a healthy female baby weighing 3450 grams. Neonatal examination of the newborn revealed no congenital anomalies.

Keywords: Renal transplantation; Renal function; Pregnancy; Delivery.

Introduction/background

In recent decades, organ transplantation has largely benefited from advances in immunosuppressive therapy and surgical techniques. The reproductive function, alongside the patient's quality of life and survival, has also been improved [1,2]. However, close follow-up for early detection of any renal injury is crucial, since the occurrence of acute rejection, dysfunction, or allograft loss, is unpredictable. Many studies are currently trying to identify reliable biomarkers of acute and chronic renal injury, which enable an early diagnosis of renal injury [3]. Anatomical and functional modifications encountered during pregnancy may favor occurrence of decline in the renal function.

Case presentation

We report a 35-year-old patient (G1P0), with a history of celioscopic appendectomy for acute appendicitis 2 years ago and

a resected anorectal nondysplastic condyloma fortuity discovered during the rectal examination. She has a history of renal transplantation, 6 years ago, undergoing immunosuppressive therapy based on Azathioprine 50 mg per day and tacrolimus monohydrate 1 mg per day. She continued these two drugs during her pregnancy. Follow-up renal function tests were all normal, and she had no hypertension. Pregnancy follow-up revealed on gynecological examination the presence of numerous vaginal condylomas, indicating a delivery by cesarian section. She was admitted to our department (Gynecology and Obstetrics department) at 39 weeks and 3 days of amenorrhea.

Physical examination revealed an arterial pressure at 130 mmHg/70 mmHg, a respiratory rate at 14 breaths per minute, and a heart rate at 95 beats per minute. Abdominal examination revealed presence of kidney transplantation scar on the right iliac fossa with smaller laparoscopic appendectomy scars.

Obstetrical examination revealed a uterine fundal height at 31 cm. Fetal ultrasound, amniotic fluid and Doppler evaluation of the umbilical artery were normal.

An ultrasound evaluation of the transplanted kidney was also performed during her admission, as for follow-up during her pregnancy, and identified a normal kidney, located on the right iliac fossa, with no signs of hydronephrosis. Doppler evaluations of vascular anastomosis revealed no abnormalities.

We have performed a cesarian section and the patient gave birth to a healthy female baby weighing 3450 grams. Neonatal examination of the newborn revealed no congenital anomalies.

Discussion

During pregnancy, occurrence of changes in renal function, especially by increase in renal plasma flow, is well established. This will induce an increase by 50% of the glomerular filtration rate [3]. In renal transplant patients, this pregnancy-associated modification in renal function could potentially influence graft survival [4]. In many studies analyzing the occurrence of fetal and/or maternal complications after renal transplantation, no increase in preeclampsia, prematurity, or low birth weight incidences has been noticed [3]. However, pregnancy seems to favor dysfunction of the kidney graft in the first year postoperatively, which is reflected by a decline in renal function [5].

Regarding factors potentially explaining this phenomenon, some studies have demonstrated a reduction of immunosuppressive drug levels in the serum during pregnancy [6]. More frequent monitoring of immune suppressive medications during pregnancy is recommended [6].

In a large study of 43 pregnant women after renal transplantation in Brazil, the anemia rate was 60.5%. Among these women, 4.5% needed a transfusion in the first 2 days after delivery. Since reduced erythropoietin levels in patients with chronic nephropathy, it is recommended to treat anemia with human recombinant erythropoietin, as reported by Van Biesen in 2005 [7].

Among modifications encountered during pregnancy, anatomical and functional changes in the urinary system may favor the occurrence of urinary infections, which should be an indication of constant prophylaxis during pregnancy [8]. The occurrence of urinary infection in the context of renal transplantation during pregnancy would induce a renal function decline [9].

Preeclampsia seems particularly frequent in women after renal transplantation, as shown in many studies [3,10]. This condition is surely favored by other associated comorbidities, such as vasculopathy, diabetes, and nephropathies [11]. Preeclampsia should be rigorously screened for in pregnant women with a history of renal transplantation since chronic hypertension and proteinuria are often found in these patients. This condition is reported in some studies to be first responsible for declines in the glomerular filtration rate, (65% of pregnancies in women after renal transplantation), where as physiological, pregnancy - puerperium cycle-related decrease in renal filtration seems to have no negative effects on the renal graft or patient survival [3,4].

In the literature, the prematurity rates vary among studies

between 50% and 80% [12,13]. Prematurity is a major complication since it is associated with high fetal morbidity and mortality rates [3]. In one series, a small weight for the gestational age, secondary to growth restriction was observed in 30.5% [3]. However, prematurity was not directly correlated with the degree of renal dysfunction but rather with the presence of other maternal comorbidities, such as hypertension and proteinuria.

A close follow-up of pregnant women with a history of renal transplantation is essential since there is a close relationship between fetal outcomes and the degree of renal dysfunction, severe hypertension, and the presence of proteinuria. Serum creatinine levels and proteinuria are two important markers to explore renal function in these patients. Assessing proteinuria in such cases can also be achieved with Polymerase Chain Reaction (PCR).

This technique is applied on spot urine samples instead of 24 h urine samples, and it is not affected by variations in the urine concentration [14]. PCR has a sensitivity and specificity in predicting preeclampsia reaching 96.0% and 94.0%, respectively [15,16]. It is worth mentioning that adverse maternal outcomes can be suspected when elevated proteinuria using PCR [17].

Arterial pressure values follow-up is a key element in pregnant women with a history of renal transplantation. A rise three times higher than the initial values are considered diagnostic of preeclampsia [3]. Hypertension is one (With the degree of renal dysfunction) of the two major markers influencing the maternal-fetal prognosis.

A more sensitive marker is albuminuria. It reflects damage to the glomerular basement membrane when its values are higher than 300 mg/L [3].

Urinary Retinol-Binding Protein (RBP) is a marker of tubular function and is recently classified as an adipokine. It seems to have increased levels in women with preeclampsia [20]. However, all available data about this promising factor is reported in pregnant women with no reference to women with a history of renal transplantation, and more studies about the utility of this marker in the diagnosis of preeclampsia on this category of pregnant women are needed. SE valuation of graft function in pregnant women should be routinely performed [3].

Conclusion

- Preeclampsia should be rigorously screened for in pregnant women with a history of renal transplantation.
- A close follow-up of pregnant women with a history of renal transplantation is essential since there is a close relationship between fetal outcomes and degree of renal dysfunction, severe hypertension and presence of proteinuria.

Acknowledgments: The authors declare no interest conflict.

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