

Pregnancy in parents both with renal transplants

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Abstract

The antenatal management of a mother who received a kidney transplant at the tender age of 14 years and continually on immunosuppressive medication, married to a person who himself is a kidney transplant recipient on immunosuppressive medication, is exemplified in this case report. The effects of her medication during pregnancy, with her antenatal management and delivery are illustrated. The neonatal management of the baby and the medicinal effects on breast feeding and contraception is discussed.

Key words: Kidney transplant, pregnancy, antenatal management.

Introduction

The rapid turnover at the Renal Transplant Unit, Teaching Hospital Kandy, Sri Lanka, has resulted in many young women with end-stage renal failure receiving renal transplantations. Their ability to conceive without assisted reproductive techniques has been curiously observed for many years. The antenatal management of a mother who received a kidney transplant at the tender age of 14 years and continually on immunosuppressive medication, married to a person who himself is a kidney transplant recipient on immunosuppressive medication, is depicted and the potential fetal effects are deliberated.

Case Report

Ms. FR, detected with end-stage renal failure since 2001 received a live donor kidney transplant, from her cousin brother, in March 2002, at the age of 14 years. The transplant was successful and the graft remains stable. She is married to Mr. AAMN, 28 years, who also was detected with end-stage renal failure from the age of 24 years. He had received a live donor kidney transplant in April 2006, also from a cousin

brother. In his case too, the transplant was successful and the graft remains stable. The Consultant Nephrologist had been consulted in pre-marriage counselling, and much to their delight, their childbearing ability had been sanctioned, after continual clinical and biochemical investigations.

Women are usually advised to wait at least 1 year after living related donor transplantation and 2 years after cadaver transplantation before conceiving. Ms. FR married seven years after her living related donor transplantation and conceived one year after marriage without assisted reproductive techniques. By waiting for the recommended time after transplantation to become pregnant, she has passed the peak time of risk for cytomegalovirus infection which is the most frequent cause of viral infection post-transplantation. Women who are not rubella immune should receive the rubella vaccine before transplantation, because live virus vaccines are contraindicated post-transplantation¹. This had been adhered to, in her case.

Medication during pregnancy

The immunosuppressive medication taken by Ms. FR during her pregnancy and their fetal effects are listed below:

1. Prednisolone - Although prednisolone can cross the placenta the maternal- to cord-blood ratios are approximately 10:1². Therefore complications such as increased risk for cleft lip (OR = 6.55; p = 0.015) 3 and fetal growth restriction 4 are unlikely if the dose of prednisone has been decreased to below 15 mg daily⁵. Ms. FR who was on a daily dose of 7.5 mg.
2. Azathioprine - She was on a daily dose of 50 mg. Although 64-93% of azathioprine administered to mothers appears in fetal blood as inactive metabolites, the immature fetal liver lacks the enzyme inosinate pyrophosphorylase needed for conversion to its active metabolite, 6-mercaptopurine, and the fetus is relatively protected from the effects of the drug⁶.
3. Cyclosporin - She was on a daily dose of 50 mg. Cyclosporine crosses the placenta and the fetal levels of this drug may range between 30 and 64%

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of the maternal plasma concentration⁷. By literature the overall odds ratio for congenital malformations, with cyclosporine, of 3.47 (CI 0.86-14.4) was not statistically significant. However, the prevalence of low birth weight was statistically significant with an odds ratio of 1.59 (CI 1.05-2.40)⁸. A low birth weight baby was observed in this patient aided also by the steroids taken by her.

Male kidney recipients

It is also of note that in 195 pregnancies fathered by male kidney recipients, the pattern of pregnancy outcomes resembled that of the general population⁹.

Antenatal history

She was seen more frequently than the others in the antenatal clinic and always assessed by the consultant obstetrician with constant attention to renal function tests and urinary tract infection. Of the noted antenatal complications after renal transplant of hypertension¹⁰, pre-eclampsia, impaired renal function, pre-term labour (19-45%)¹¹ and fetal growth restriction (ranging from 13-25%)¹¹, only the last complication was detected in this patient by serial ultrasound examinations. Low birth weight infants (38%) among female transplant recipients is significantly higher than that in the general population⁹ as revealed by the birth weight at delivery. Urinary tract infections, the most common bacterial infections that occur in up to 40% of pregnant transplant recipients was detected twice in this patient and warranted a 10-day course of oral antibiotics.

Delivery

An elective caesarean section was performed at the gestation of 38 weeks, taking into consideration the fetal growth restriction detected by serial ultrasound examinations. This was performed through a Pfannenstiel incision taking special care of the implanted kidney in the right iliac fossa. The baby with a birth weight of 2230 g was delivered and subsequently observed in the special care baby unit for two days and discharged without any of the complications listed below.

Neonatal complications

None of the established neonatal complications, such as asphyxia, physiological jaundice, disseminated intravascular coagulation, thrombocytopenia, intracerebral haemorrhage, hypoglycaemia and necrotizing enterocolitis, was seen in this neonate.

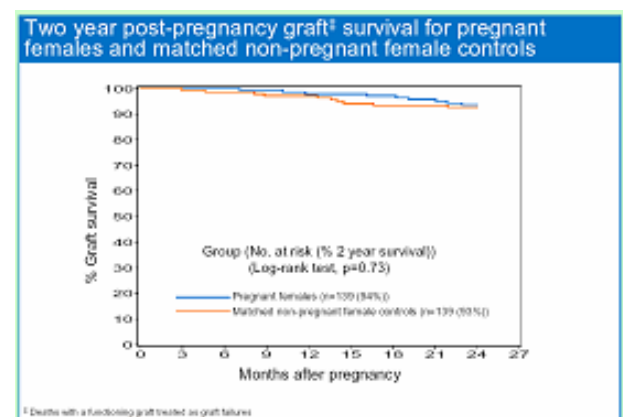
Breast feeding

Breastfeeding is discouraged for patients taking any immunosuppressive drugs. Cyclosporin

measurement in maternal blood and breast milk revealed a mean breast milk/maternal blood level ratio of 0.8412. These levels can be toxic to a newborn as can azathioprine.

Contraception

A low dose oestrogen-progesterone oral contraceptive preparation was advised. The risk of infection from the use of intrauterine devices (IUD) is increased in immunocompromised patients. Also the efficacy of IUDs may be reduced because of the anti-inflammatory properties of immunosuppressive agents.



Long-term sequelae

Although a reduction in graft survival rates is seen over time in all transplant patients, no significant difference is seen in two year graft survival rates between pregnant females and non-pregnant matched female controls¹³.

Discussion

Child-bearing for women with end-stage renal failure, which seemed impossible some years ago, now emerge as a viable alternative with the establishment of renal transplant units in major hospitals in this country. There is only a minimal difference in the two-year 'graft survival' rates between pregnant females and matched non-pregnant females, following renal transplantation. This significant detail would be most welcome for women with end-stage renal failure, to conceive and deliver normal babies, after kidney transplantation, and as in this patient, without assisted reproductive techniques.

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