



MINI REVIEW

Is Pregnancy Safe for Kidney Transplant Recipients With Chronic Hepatitis C Virus (HCV) Infection? An Updated Review

Ethem Unal^{1*} , Abdullah Yildiz¹ , Sema Yuksekdogan¹ , Aysun Firat² and Nevin Yilmaz³

¹Department of Surgery, Health Sciences University, Umraniye Education and Research Hospital, Turkey

²Department of Obstetrics & Gynecology, Health Sciences University, Istanbul Education and Research Hospital, Turkey

³Department of Gastroenterology and Hepatology, Medical Faculty, Eastern Mediterranean University, Magosa, Turkish Republic of Northern Cyprus

*Corresponding author: Ethem Unal, MD, Associate Professor of General Surgery, Department of Surgery, Health Sciences University, Umraniye Education and Research Hospital, Turkey



Abstract

Ovarian function with regular menstrual cycles is usually restored in women of reproductive age after solid organ transplantation. The number of pregnancies reported in these patients increases gradually. Pregnancy is always considered high risk, and if not properly planned, may lead to serious complications. The best for the patient is to conceive in a period of good general health and good stable graft function, after appropriate preparation. However, hepatitis C virus (HCV) infection will be an additional risk factor in these cases. The present study was designed to review the possible risks and outcome of pregnancies in kidney transplant recipients with HCV.

Keywords

Pregnancy, Kidney transplantation, Hepatitis C Virus (HCV)

Introduction

Hepatitis C virus (HCV) infection has been reported in 1 to 4% of pregnant women [1]. It has been estimated that there is an approximately 5% risk of vertical transmission to the newborn [2]. Placental barrier forms a preventive role, but high maternal viral load and human immunodeficiency virus (HIV) co-infection or maternal drug abuse might cause fetal infection. Babies born to HCV positive mothers have shown biochemical features of liver damage in first 12 months of life and progression to chronicity seems to have occurred in majority of these children although the disease has been mild [3].

Immunosuppressive conditions like kidney transplantation may provoke viral activation, especially in case of pregnancy, and in the present study, we tried to review the outcome of pregnancies in kidney transplant recipients with HCV.

Methods

A systematic search was done by entering the key words 'hepatitis C virüs (HCV), kidney transplantation, pregnancy' in Web of Science, EBSCO Discovery Service (EDS), and all English-written original articles and reviews were evaluated.

Results

A total of 17 review articles on the health of pregnant women with solid organ transplantation, and vertical transmission of HCV in pregnancy and outcomes were evaluated from the year 1997 to date. A very limited number of studies on solid organ transplanted women with chronic HCV infection were found. We mainly focused on patients with kidney transplantation. The inference from these articles were summarized, and written in form of a mini-review.

Discussion

Women with end stage renal disease (ESRD) have abnormalities in their hypothalamo-pituitary-ovarian axis, commonly manifested by amenorrhea, anovula-

tion, decreased libido, vaginal dryness, impaired fertility and earlier onset of menopause [4,5]. Pregnancy is therefore rare in women on dialysis. Kidney transplantation allows the hormonal axis to normalize within 6 months, resulting in fertility improvement. Though kidney transplant recipients have a higher probability of delivering a live child compared to women who conceive on hemodialysis, there are still risks when compared to the general population [6,7].

Pregnancy in a kidney transplant recipient continues to remain challenging due to side effects of immunosuppressive medication, risk of deterioration of allograft function, risk of adverse maternal complications of preeclampsia and hypertension and risk of adverse fetal outcomes of premature birth, low birth weight, and small for gestational age infants. The factors associated with poor pregnancy outcomes include presence of preeclampsia, serum creatinine greater than 1.4 mg/dL, and proteinuria [1,2]. The recommended maintenance immunosuppression in pregnant women is calcineurin inhibitors such as tacrolimus and cyclosporine, azathioprine, and low dose prednisone. Sirolimus and mycophenolate mofetil (MMF) should be stopped 6 to 8 weeks prior to conception [8].

The highest prevalences of disease have been reported from Asia. Khokhar, et al. have reported HCV infection in pregnant women in Pakistan as 6.7% which is higher than 0.19% to 4.41% reported in Caucasians [9]. They reported that the seroprevalence in pregnant was close to the rate in general population in Pakistan. Most frequent risk factor was the history of blood transfusion. In conclusion, they stated that as vertical transmission is possible, antenatal screening of selected pregnant women with known risk factors may be helpful.

Pregnancy itself does not appear to negatively affect chronic HCV infection. In general, serum alanine aminotransferase (ALT) levels decrease during the first and third trimesters of pregnancy and increase after delivery. HCV ribonucleic acid (RNA) levels rise during the first and third trimesters, reaching a peak during the third trimester, and decrease postpartum [10]. These effects are likely due to the immunosuppressive effects of pregnancy. HCV-infected pregnant women have a higher incidence of intrahepatic cholestasis of pregnancy when compared to noninfected pregnant women. No specific risk factor predicts transmission and no specific intervention (antiviral, mode of delivery, or others) has been demonstrated to reduce HCV transmission except for suppression of HIV replication in women with HIV/HCV coinfection. Given the potential associated risk of vertical transmission, it is advisable to avoid invasive procedures, such as fetal scalp monitors and forceps delivery.

Women of reproductive age with HCV should be counseled about the benefit of anti-viral treatment prior to pregnancy to improve the health of the mother and eliminate the low risk of vertical transmission. Women who become pregnant while on therapy with or without ribavirin should discuss the risks versus benefits of continuing treatment with their physicians. Ribavirin is contraindicated in pregnancy due to its known teratogenicity [11]. In case of an additional morbidity like kidney transplantation with immunosuppression, the pregnancy can be more complicated and the risk of vertical transmission can be higher. However, good results are possible. Yilmaz, et al. have evaluated whether pregnancy is a risk factor for poor outcome of infection with HCV for for allograft deterioration among kidney transplant recipients [12]. Their first case was a 41-year-old pregnant kidney transplant recipient with elevated creatinine and a history of toxic hepatitis. The second patient was treated with interferon before transplant. Tacrolimus-based immunosuppressive regimens were used during the pregnancies. Hypertension complicated both pregnancies, and the pregnancies ended with cesarean delivery at preterm and term with healthy but low-weight newborns. The first patient became positive for HCV RNA after pregnancy without a flare in transaminase level. Antibodies to HCV were negative in the newborns. The authors have concluded that pregnancy should be promoted for kidney recipients infected with HCV who have stable graft and liver function.

In conclusion, reproductive function is usually restored in women of reproductive age after solid organ transplantation. However, pregnancy is always considered high risk, and may lead to serious complications. The best for the patient is to conceive in a period of good general health and good stable graft function, after appropriate preparation. Even HCV infection will be an additional risk factor in these patients, successful outcome is possible in female recipients who have stable graft and liver function.

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