Pregnancy following an elective liver transplant: a case report and review of the literature

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We report a case of a successful pregnancy managed to term in a liver transplant recipient. With an increasing number of liver transplants being performed, and increasing five-year survival rates, it is expected that similar cases will be seen more often.

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Introduction

Pregnancy in patients who have received liver transplantation has been described previously.[1-4] Pregnancy can be successful, provided it is managed as a high-risk situation by both an obstetrician and a physician. Complications during pregnancy include early foetal wastage, hypertension, infections, pre-term labour, and growth retardation. Neonatal complications include foetal respiratory distress, adrenal insufficiency, neonatal lymphocytopaenia, and infection.[1-4]

Pregnancy does not appear to increase the risk of graft rejection or impairment.[1,3] Multiple hepatic adenomas are rare and the prognosis is uncertain.[5,6] The condition is classified as a hormone-associated hepatic disorder,[5] and the patient may be at risk of growth and rupture of the adenoma during pregnancy, which can be fatal.[3]

In this case report and literature review, we describe a pregnancy successfully managed to term in a patient who had an elective orthotopic liver transplant for multiple hepatic adenomas because of haemorrhagic infarction of an adenoma, haemodynamic compromise, and her desire for future child-bearing.

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Case report

A 32-year-old liver transplant recipient (G3P1), presented for obstetric care in 1994, at 17 weeks' gestation. In 1984, she had had a normal vaginal delivery, and, in 1993, a first trimester loss. She had been on the combined oral contraceptive pill for one month at the age of 16 years. In 1990, she underwent hepatic transplantation because of multiple hepatic adenomas, and apart from one episode of graft rejection and mild hypertension, had an uncomplicated post-transplantation course. Prior to the liver transplant, the woman had experienced persistent right upper quadrant pain, intermittent jaundice, subphrenic abscess, and one episode of intraperitoneal bleeding. It was suspected that the multiple adenomas may have been due to her 1984 pregnancy.

At booking during this pregnancy, she was found to be normotensive and her physical examination was normal. The uterine size was consistent with dates, and the gestation was confirmed by ultrasound. All investigations, including liver function tests, were normal apart from a mild anaemia, which was managed with oral supplementation. Medications at booking included prednisone, azathioprine, and cyclosporin. These were continued throughout the pregnancy and blood levels were regularly monitored.

The woman was managed as an out-patient until week 26, when she was admitted for assessment. At that time, she complained of headache and was found to have an elevated blood pressure. Her uric acid level was 450 μmol/L (normal range, 120-420 μmol/L), but all other parameters were normal, including liver function tests, coagulation studies, urinalysis, and foetal

growth as assessed by ultrasound. Antihypertensives were commenced and, once stabilised, she was discharged to be seen on a weekly, day-stay basis.

At 34 weeks' gestation, the patient was again admitted because of rising blood pressure. Investigations revealed a uric acid reading of 440 μmol/L, creatinine of 98 μmol/L (normal range, 30-70 μmol/L), and a platelet count of 169 x 10^9/L (normal range, 150-450 x 10^9/L). Ultrasound revealed adequate foetal growth. Blood pressure was controlled with antihypertensive drugs and the patient remained in hospital. At 38 weeks' gestation, she developed regular contractions. A cardiotocograph revealed variable decelerations, and examination found a closed cervix with breech presentation. A lower segment Caesarean section was performed with general anaesthetic. The infant's cord arterial pH was 7.07 and the birthweight was 3020 g. Both mother and infant were discharged in good health 10 days later. The mother remained on antihypertensives and her usual medication after discharge. To date, there has been no recurrence of the hepatic adenoma.

Discussion

Hepatic adenoma during pregnancy is associated with a risk of rupture. Successful pregnancy in women following partial hepatectomy for removal of hepatic adenoma has been described.[3] In this case, the woman had a liver transplant in 1990, because of haemorrhagic infarction of multiple adenomas, haemodynamic compromise due to inferior vena cava obstruction, as well as her desire for future child-bearing. It was felt that the multiple adenomas were associated with the patient's first pregnancy and, as the condition appears to be hormone-dependent,[5] a subsequent pregnancy may have had fatal consequences.[3]

Long term survival following liver transplant is possible, with five-year survival rates between 60% to 70%.[7] As a result of liver transplantation, the increase in fertility is often immediate and counselling about the inheritance of certain liver diseases and the need to avoid pregnancy for 12 months is advisable. Barrier contraception, or tubal ligation, if child-bearing is complete, are recommended. Intrauterine contraceptive devices may be associated with infection due to immunosuppression, and oral contraceptives may affect the metabolism of cyclosporin or be associated with the recurrence of some types of liver disease.[1,2]

Pregnancy appears not to be associated with an increase in graft rejection or impairment. However, pregnancy is associated with an increased risk of severe hypertension. This is partly due to the immunosuppressive therapy Cyclosporin A is nephrotoxic, and may suppress maternal antibodies that block paternal antigen recognition,[1,2] while corticosteroids are known to enhance the renin-angiotensin-aldosterone system. Furthermore, liver transplant recipients are often primiparous or have underlying renal disease.[1] This may explain the higher incidence of growth retardation. Alternatively, growth retardation may be related to preterm delivery.[1,8]

Immunosuppression predisposes to infection, the theoretical risk of pre-term premature rupture of the membranes, and pre-term labour.[1] Cytomegalovirus infection may be responsible for cases of early foetal wastage.[1,4] Immunosuppression has the potential to allow reactivation of viruses such as toxoplasmosis, rubella, and parvovirus, while the prevention of hepatitis B transmission from mother to infant has been described with the use of weekly immunoglobulins and neonatal immunoprophylaxis.[1,9] Neonatal complications with low dose immunosuppression are rare,[1] but foetal respiratory distress, adrenal insufficiency, neonatal lymphocytopaenia, and infection have occurred.[1,2,4] The long term effects of immunosuppression on the offspring of liver transplant recipients are unknown, and reports of congenital abnormalities are conflicting.[1,3]

In this case, the elective liver transplant and subsequent pregnancy had a good outcome. Indeed, without an elective transplant pregnancy may have been fatal. This case confirms that successful pregnancy is possible following liver transplantation, provided that it is managed as a high-risk situation by specialist teams, and with increasing five-year survival, similar cases will be seen more often.

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