A case of herpes hepatitis: an important diagnosis to consider in pregnancy

C. Hui*, K.K. Lau

Department of Diagnostic Imaging, Monash Medical Centre, Melbourne, Australia

Introduction

Herpes simplex virus (HSV) is a rare cause of hepatitis in adults. It occurs in two distinct adult populations: pregnant women and immunocompromised adults.1 Although there are no specific clinical features, abnormal liver function tests and the absence of jaundice in the third trimester of pregnancy should raise suspicion of HSV infection. The diagnosis, however, may not be suspected clinically therefore it is important for the radiologist to be aware of this entity and alert the clinicians in order to allow an early effective treatment. The disease carries a grave prognosis if left untreated or if treatment is delayed. The case presented illustrates a rapidly progressing, fulminating hepatitis caused by HSV in a pregnant woman. Although HSV hepatitis is a rare entity, it should be considered as a differential diagnosis of hepatic dysfunction with rapidly changing imaging findings, particularly in the third trimester of pregnancy, as treatment with acyclovir results in a significant reduction in mortality.

Case report

A 30-year-old woman, gravida 3 para 1, presented to the Emergency Department at 31 weeks gestation with dysuria, fever and malaise. There was no significant past history and no history of HSV infection in previous pregnancies. She was found to have a urinary tract infection. Her liver function tests were incidentally noted to be mildly elevated, aspartate aminotransferase (AST) 765 (normal < 50), alanine aminotransferase (ALT) 581 (normal < 40). An abdominal ultrasound at this time was unremarkable. In particular, there was no liver or biliary tree abnormality. Nine days after her initial presentation, she presented again to the Emergency Department with seizures and confusion consistent with encephalopathy. On physical examination there was no jaundice, right upper quadrant tenderness, hepatomegaly or hypertension. Her liver function tests demonstrated further increase in AST to 2316 and ALT to 622. Her INR was elevated to 1.7. A repeat abdominal ultrasound now demonstrated hepatomegaly and a heterogeneous echo texture to the liver (Fig. 1). Blood cultures were negative as was serology for the following infections: hepatitis A, B, C, cytomegalovirus (CMV), Epstein-Barr virus (EBV), human immunodeficiency virus (HIV), toxoplasmosis, parvovirus and flavivirus.

An emergency Caesarean section was undertaken given the patient’s worsening encephalopathy. A normal, healthy male was delivered with no evidence of any neonatal infection. Despite the Caesarean section, the AST, ALT and INR continued to climb. The patient was noted to have increasing abdominal distension for which a CT examination was performed. This demonstrated moderate to marked hepatomegaly with numerous scattered, small, rounded areas of low attenuation (Fig. 2). There was gross ascites (Fig. 3). Because of the uncertain nature of the liver pathology, a liver biopsy was performed at day 12 post-initial presentation. This demonstrated massive hepatic necrosis with haemorrhage and a neutrophilic infiltrate. HSV 1 immunoperoxidase stain showed strong nuclear staining. These findings were consistent with fulminating hepatic necrosis due to HSV infection. Despite the immediate commencement of intravenous acyclovir, there was further rapid deterioration of liver function leading to multiorgan failure and death of the patient 16 days after presentation.

Discussion

HSV is a rare cause of adult viral hepatitis. The first reported case of HSV hepatitis occurred in a pregnant woman in the third trimester, in 1969.2

According to Yaziji et al.,1 from 1969 to 1997, only 56 cases of HSV hepatitis have been reported. Twenty-one of these cases occurred in pregnant women and all of these occurred in the third trimester. The other documented cases in adults involved immunocompromised patients. In particular, renal transplant recipients and patients on steroid therapy were affected.1 It is thought that...
the altered immune function during pregnancy allows the systemic disease to develop. It has been suggested that restricted T cell function occurs in normal pregnancy to prevent maternal rejection of foetal and placental tissues. Specifically, immune abnormalities involve an altered CD4:CD8 lymphocyte ratio, inversion of the B:T lymphocyte ratio and impaired natural killer (NK) cell activity.1 This is thought to facilitate systemic herpes infection.3 In adults, the HSV hepatitis may be the result of either primary infection or reactivation of latent infection.3 Both HSV1 and HSV2 serotypes may be implicated. Of the reported cases, 63% of fulminant HSV hepatitis resulted from HSV type 2. In three cases, both HSV1 and HSV2 were found.3 The mortality in pregnancy due to HSV hepatitis without treatment approaches 75%.4 This is reduced to 20% with antiviral administration commenced in the early stage of the disease. Acyclovir is the treatment of choice and can safely be used in pregnancy.

In most cases of HSV hepatitis, there is severe liver failure with marked elevation of AST and ALT. The patient is typically not jaundiced.5 There may be right upper quadrant pain and fever. Genital or oral herpetic lesions may or may not be present.1 The differential diagnosis of hepatic disorders in the third trimester of pregnancy include acute fatty liver of pregnancy, cholestasis of pregnancy and HELLP syndrome, characterized by haemolysis, elevated liver enzymes and low platelets. In these situations, prompt delivery of the foetus reverses the process, whereas the course of viral hepatitis continues after delivery.3

The imaging findings of acute viral hepatitis are non-specific. Acute hepatitis may produce oedema or inflammatory cell infiltration around the portal tracts of the liver. This manifests as increased echogenicity around the portal triads on ultrasound.5 Other findings include hepatomegaly and gall bladder wall thickening. In most instances, as in our case, the liver appears normal at the initial stage.6 On CT, a low attenuation portal collar may be seen around the portal tracts.5 When the hepatitis becomes fulminant, low attenuating, non-enhancing areas are seen throughout the liver parenchyma,7 as demonstrated in the present case. The entire liver or only random areas may be involved.7 On magnetic resonance imaging (MRI), periportal high signal intensity on T2-weighted images may occur due to increased tissue water content that accompanies oedema and infiltration of inflammatory cells.4 HSV hepatitis is a rare entity, but it should be considered as a differential diagnosis of hepatic dysfunction, particularly in the third trimester of pregnancy. Early treatment with acyclovir results in a significant reduction in mortality.

Figure 1 A 30-year-old woman in the third trimester of pregnancy with an enlarged and heterogeneous liver on ultrasound.

Figure 2 Post-contrast CT image 11 days later demonstrated marked hepatomegaly with numerous small rounded areas of low attenuation within the parenchyma.

Figure 3 Post-contrast CT image at a lower level showed ascites.
References