CASE REPORT

An unusual presentation of perinatally transmitted hepatitis C

P Mohan, R S Chandra, D E Kleiner, N L C Luban

Arch Dis Child 2003;88:160-161

A unique presentation of perinatally acquired hepatitis C (HCV) with acute jaundice and chronic aggressive liver disease in a previously asymptomatic preadolescent is described. The difficulties in establishing the diagnosis and the importance of confirmatory testing for HCV in cryptogenic liver disease are discussed.

This report illustrates an unusual presentation of hepatitis C (HCV) with acute jaundice and rapid progression of liver disease in a preadolescent patient. It highlights the challenges in establishing the diagnosis and identifying the risk factors. Liver disease from chronic HCV in children is milder and progresses much more insidiously than in adults; decompensated liver disease is rare.^{1,2}

CASE REPORT

An 11½ year old boy presented with acute jaundice, fever, diarrhoea, loss of appetite, and pruritis. He had no history of chronic symptoms, medications, or known ill contact. He was born at 34 weeks gestation by emergency caesarean section for placental abruption. The mother received several blood transfusions before and after delivery; the infant was not transfused. Both remained asymptomatic. The infant was breast fed briefly.

On examination, the patient had jaundice and mild hepatomegaly. Laboratory test results were as follows: total and direct bilirubin concentration, 153.9 and 125.8 µmol/l respectively; alanine aminotransferase, 199 U/l; aspartate aminotransferase, 498 U/l; γ glutamyltranspeptidase, 151 U/l. Prothrombin and partial thromboplastin time were slightly elevated. A complete blood count, serum immunoglobulins, caeruloplasmin, and α₁ antitrypsin were normal. Antibodies to hepatitis A, B, C, and D, cytomegalovirus, Epstein-Barr virus, HIV, and markers for autoimmune hepatitis were negative. A percutaneous liver biopsy showed advanced chronic hepatitis (grade 3 inflammation, stage 3 fibrosis) with a histological score of 16.³ A diagnosis of cryptogenic, chronic active hepatitis was made. Despite the HCV seronegativity, the maternal transfusion history prompted us to obtain HCV viral RNA (branched chain DNA, performed inhouse), which was positive on two separate occasions. The mother was then tested, and positive results were found for HCV enzyme immunoassay (EIA), recombinant immunoblot assay (RIBA)-2 (Strip Immunoblot assay; Chiron, Emmerlyville, California, USA), and HCV polymerase chain reaction (Amplacor; Roche Diagnostics, Somerville, New Jersey, USA); HIV antibody was negative. She had a mixed genotype of 1a and b. The donors involved in the mother's transfusion had no evidence of exposure to HCV by history or surrogate markers. One donor tested HCV negative subsequently. The mother later admitted to intravenous drug use in the past.

Subsequently, the patient's jaundice cleared, but the transaminase activities did not normalise and platelet count

gradually fell. A second liver biopsy six months later showed worsening fibrosis. The patient remained HCV seronegative and polymerase chain reaction positive, but two years later became EIA-2 positive. The HCV genotype was 1a. A third liver biopsy after four years showed early cirrhosis. The patient failed a trial of interferon and ribavirin. He is awaiting the advent of newer treatments.

DISCUSSION

The patient's initial presentation with acute jaundice and elevated transaminase activity was consistent with acute hepatitis, but the liver biopsy showed chronic, aggressive liver disease. This could implicate a superinfection with a hepatotropic virus on pre-existing HCV infection, despite the lack of laboratory markers. Acute HCV infection in a patient with a previously undetected chronic liver disease was unlikely. The patient had no apparent risk factors for acute HCV infection, other than close contact with his infected mother. Perinatal transmission was the most obvious source of HCV despite circumstantial evidence.

The initial absence of HCV seropositivity was misleading and could have delayed the diagnosis but for the positive polymerase chain reaction. On the basis of 93-97% sensitivity, the HCV EIA-2 could have been falsely negative at that time. However, two years later the patient tested positive by the same generation of antibody testing. The seronegative period far exceeded the well established "window" between the appearance of viral RNA and antibodies following acute infection.⁴ Cryoglobulinaemia, a cause of false seronegativity, was absent in our patient. Antibody negative HCV infection is well documented in immunocompromised patients such as organ transplant recipients and HIV infected patients.⁴ Persistent seronegativity has been described even in immunocompetent adults and children, caused by either failure of the host to produce antibodies or reactivity restricted to polypeptides not included in the available commercial assays.^{5,6}

The unique presentation with acute jaundice in the second decade, chronic aggressive liver disease, and the diagnostic dilemma from a prolonged period of seronegativity is instructive. It challenges the clinician to consider atypical presentations of chronic liver diseases particularly from HCV while working up idiopathic acute hepatitis, despite negative screening tests.

ACKNOWLEDGEMENTS

We thank Ms Fairon Fitzhugh and Dr Benny Kerzner for assistance in the preparation of this report.

Authors' affiliations

P Mohan, R S Chandra, N L C Luban, Departments of Pediatric Gastroenterology and Nutrition, Pathology and Laboratory Medicine, Children's National Medical Center, George Washington University School of Medicine, Washington DC, USA

D E Kleiner, Laboratory of Pathology, National Cancer Institute, National Institutes of Health, Bethesda, MD, USA

Correspondence to: Dr Mohan, Department of Gastroenterology and Nutrition, Children's National Medical Center, 111 Michigan Avenue, NW Washington, DC 20001, USA; pmohan@cnmc.org

Accepted 17 July 2002

REFERENCES

- 1 **Tovo PA**, Newell ML. Hepatitis C in children. *Curr Opin Infect Dis* 1999;**12**:245–50.
- 2 **Mohan P**, Glymph C, Baxter C, *et al*. Histopathology and epidemiology of hepatitis C in children: a single institution study. *J Pediatr Gastroenterol Nutr* 2000;**31**:S115.
- 3 **Knodel RG**, Ishak KG, Black WC, *et al*. Formulation and application of a numerical scoring system for assessing histological activity in asymptomatic chronic active hepatitis C. *Hepatology* 1981;**1**:431–5.
- 4 **Gretch DR**. Diagnostic tests for hepatitis C. *Hepatology* 1997;**26**(suppl 1):43S–7S.
- 5 **Peoples BG**, Preston SB, Tzeng JL, *et al*. Prolonged antibody-negative HCV viremia in a US blood donor with apparent HCV transmission to a recipient. *Transfusion* 2000;**40**:1280–1.
- 6 **Maggiore G**, Caprai S, Cerino A, *et al*. Antibody-negative chronic hepatitis C virus infection in immunocompetent children. *J Pediatr* 1998;**132**:1048–50.

Want full access but don't
have a subscription?

Pay per access

For just US\$25 you can have instant access to the whole website for 30 days. During this time you will be able to access the full text for all issues (including supplements) available. You will also be able to download and print any relevant pdf files for personal use, and take advantage of all the special features *Archives of Disease in Childhood* online has to offer.

www.archdischild.com