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Focus on Hepatitis C

Hepatitis C virus (HCV) is a single-stranded RNA virus in the Flaviviridae family. The average time to seroconversion after exposure to HCV is 8 to 9 weeks. Acutely infected individuals may develop clinically apparent hepatitis with loss of appetite, nausea, vomiting, fever, abdominal pain and jaundice. 60%-70% of patients with acute HCV infection are asymptomatic. [1] Injecting-drug use currently accounts for 60% of HCV transmission in the United States.

Blood transfusion, is now an uncommon cause of recently acquired infections [1]. Sexual transmission of HCV appears to be inefficient relative to hepatitis B virus (HBV). Transmission between sexual partners of persons with chronic HCV infection with no other risk factors for infection is about 5% (range, 0% to 15%) [1-4] Household contact with an infected person has been associated with a nonsexual transmission rate of 4% (range, 0% to 11%) [2,5,6] Approximately 7-8% of hepatitis C virus-positive women transmit hepatitis C virus to their offspring with a higher rate of transmission seen in women coinfected with HIV [7] .

Sequelae

Acute HCV infection progresses to chronic HCV infection in most persons (75%--85%). Cirrhosis develops in 10%-20% of persons with chronic hepatitis C and hepatocellualr carcinoma in 1%-5%.[1]

In one small study acute maternal hepatitis (type B or nontype B) had no effect on the incidence of congenital malformations, stillbirths, abortions, or intrauterine malnutrition. However, acute hepatitis did increase the incidence of prematurity [8].
Pregnancy does not appear to be adversely affected by chronic HCV [9,10].

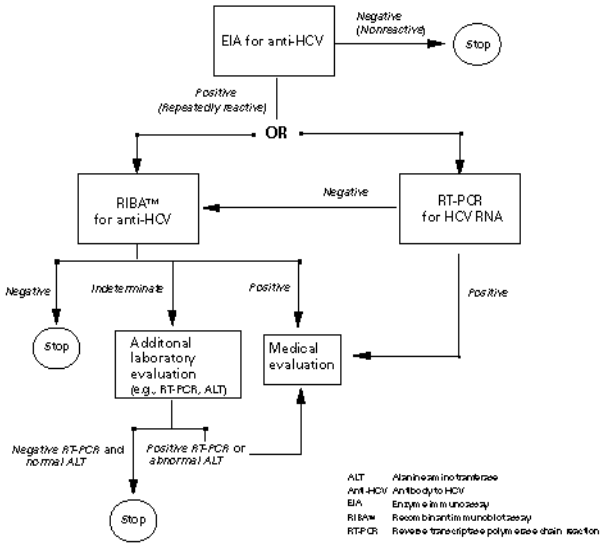
Who to Test [1]

- "Persons who ever injected illegal drugs, including those who injected once or a few times many years ago and do not consider themselves as drug users.
- Persons who received clotting factor concentrates produced before 1987;
- Persons who were ever on chronic (long-term) hemodialysis; and
- Persons with persistently abnormal alanine aminotransferase levels.
- Prior recipients of transfusions or organ transplants, including
- Persons who were notified that they received blood from a donor who later tested positive for HCV infection;
- Persons who received a transfusion of blood or blood components before July 1992; and
- Persons who received an organ transplant before July 1992.
- Healthcare, emergency medical, and public safety workers after needle sticks, sharps, or mucosal exposures to HCV-positive blood.
- Children born to HCV-positive women. "

Diagnosis

The diagnosis of HCV infection can be made by detecting either anti-HCV by enzyme immunoassay (EIA) or HCV RNA using the reverse transcriptase polymerase chain reaction (RT-PCR). If the HCV RNA result is negative supplemental testing should be performed.

FIGURE 1. Hepatitis C virus (HCV)-infection–testing algorithm for asymptomatic persons



SOURCE: CDC

The CDC recommends confirmation of a positive EIA with supplemental recombinant immunoblot assay (RIBA®) or RT-PCR for HCV RNA. (Figure 1). Supplemenatal testing using RIBA® may be run on the same sample as the EIA. However, If RT-PCR is used to confirm anti-HCV results, a separate serum sample will need to be collected.

The present supplemental RIBA® detects four viral antigens. The test is considered positive if at least two antigens are detected. The test is indeterminate if only one antigen is detected. If the RIBA® is indeterminate , further laboratory testing might include repeating the anti-HCV in two or more months or testing for HCV RNA and ALT level.[11] Table1. may be helpful at arriving at a proper diagnosis.

Table 1: Use of diagnostic tests in hepatitis C

Diagnosis	ELISA	RIBA	HCV RNA	ALT
Chronic hepatitis C	+	+	+	+
Hepatitis C carrier	+	+	+	Normal
Recovered infection	+	+	-	Normal
False positive anti-HCV	+	-	-	Normal

ELISA=anti-HCV by enzyme-linked immunoassay; RIBA=anti-HCV by recombinant immunoblot assay; ALT=alanine aminotransferase.
From Di Bisceglie AM. Hepatitis C Lancet 1998; 351: 351-55

Treatment

Persons with hepatitis C should be referred to health-care professionals with experience in the treatment of hepatitis C.

Current approved therapy for HCV-related chronic liver disease includes alpha interferon alone or in combination with the oral agent ribavirin. Alpha-interferon-2b and ribavirin are the current treatment. Interferon does not appear to an adversely affect the embryo or fetus. However, the data is limited, and the potential benefits of interferon use during pregnancy should clearly outweigh possible hazards. [12-14]. Because there are no large studies of ribavirin use during human pregnancy, and ribavirin is teratogenic (causes birth defects) in multiple animal species the use of ribavirin during pregnancy is presently contraindicated [15].

Management

Liver enzymes and PCR should be obtained at the beginning of pregnancy, and as needed thereafter [16]

Pregnant patients with hepatitis C should be advised to:

- Obtain vaccination against hepatitis viruses A and B as indicated.
- Abstain from alcohol use
- Avoid hepatotoxic drugs such as acetaminophen (Tylenol) that may worsen liver damage.
- Inform the infant's pediatrician of the mother's hepatitis C status.
- Not donate blood, body organs, other tissue, or semen.
- Not share any personal items that may have blood on them (e.g., toothbrushes and razors).
- Discuss the low but present risk for transmission with their partner and discuss the need for counseling and testing. However, HCV-positive persons with one long-term, steady sex partner do not need to change their sexual practices. [1]

The following recommendations from The Society of Obstetricians and Gynecologists of Canada may be helpful in counseling women considering amniocentesis.

SOGC Recommendations [17]

- "Amniocentesis in women infected with hepatitis C does not appear to significantly increase the risk of vertical transmission, but women should be counseled that very few studies have properly addressed this possibility.
- In HIV-positive women all noninvasive screening tools should be used prior to considering amniocentesis.
- For women infected with hepatitis B, hepatitis C, or HIV, the addition of noninvasive methods of prenatal risk screening, such as nuchal translucency, triple screening, and anatomic ultrasound, may help in reducing the age-related risk to a level below the threshold for genetic amniocentesis.
- For those women infected with hepatitis B, hepatitis C, or HIV who insist on amniocentesis, every effort should be made to avoid inserting the needle through the placenta. "

Delivery and Postpartum

The risk of vertical transmission of HCV appears to be related to the level of viremia in the pregnant mother and not to the route of delivery. The virus does not appear to be transmitted when a woman's titer is < 10^6/mL or is negative [18-20].

Although Tejari et al [21] and Conte et al [22] did not find cesarean section to be protective against transmission of HCV to the neonate Gibb et al have found the HCV maternal to child (MTC) transmission rate to be reduced in patients delivered by elective cesarean[23]. The latter study has yet to be confirmed. Elective cesarean to reduce MCT transmission of HCV is not presently recommended by the Centers for Disease Control, American Academy of Pediatrics or the American College of Obstetricians and Gynecologists (ACOG)[1,7,24].

At delivery staff and the baby's pediatrician should be notified of the mother's hepatitis C carrier state.

Breastfeeding does not appreciably increase the risk of transmitting HCV to a neonate [21, 24-26]

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