

Common Modes of Transmission

Drug Use

Injection drug use is the single most important risk factor for HCV infection in the United States (Rosen, 2000). According to Garfein, Vlahov, and Galai (1996), 50% of all new cases of hepatitis C are believed to be secondary to injection drug use. More than 80% of new injection drug users test positive for HCV after 6 to 12 months of drug use (Neff & Schiff, 1999). After 5 years of injecting, as many as 90% of users are infected with HCV (CDC, 2000). A study by Thomas et al., (as cited in Rosen, 2000) indicates that HCV infection is acquired more rapidly after initiation of injecting than other viral infections (e.g., hepatitis B virus and HIV). This rapid acquisition of HCV infection compared with other viral infections among injection drug users is likely caused by the high prevalence of chronic HCV infection among users who may be unaware of HCV infection, resulting in greater likelihood of exposure to an HCV-infected person (CDC, 2000). Cases of HCV infection secondary to intranasal cocaine users sharing blood-contaminated straws are also well documented (Harsh et al., 2000).

Sexual Behavior

According to the CDC, sexual transmission may account for 5% of all cases of hepatitis C. The risk appears to be related to the number of sexual partners, the acquisition of other sexually transmitted diseases, high-risk partners (e.g., homosexual men, bisexual persons, injection drug users, prostitutes, and heterosexuals with multiple partners), and co infection with HIV. However, spouses of patients with chronic HCV infection who had no other risk factors for infection, were found to have low prevalence of infection (CDC, 2000).

Blood Transfusions

Direct percutaneous exposure is the most efficient vehicle of HCV transmission. According to the Surgeon General, it has been estimated that 290,000 people in the United States may have contracted HCV through transfusions that took place prior to 1992 (Bockhold, 2000). A clear correlation between blood transfusions and hepatitis existed before 1992, but today HCV is rarely transmitted by blood transfusions. Between 1985 and 1990, cases of non-A, non-B hepatitis (as hepatitis was originally termed) declined by more than 50% because of screening policies. The elimination of blood products that tested positive for anti-hepatitis B core antigen or other surrogate markers such as alanine transaminase in the early 1980s led to a reduction from 30% to 10% in the incidence of post-transfusion hepatitis. Mandatory screening for high-risk blood donors in the mid-1980s led to further reduction in transmission incidence. Donor testing was greatly enhanced in May 1990, when the HCV antibody (anti-HCV) serologic marker became available (Neff & Schiff, 1999). Because of this, risk for transfusion-associated HCV infection was further reduced to 0.001% per unit transfused (CDC, 2000).

Hemophilia

According to Seelig, Renz, Bonner, and Seelig (as cited in Neff & Schiff, 1999), hemophiliacs who were dependent on blood products before 1990 are 60 to 90% seropositive for hepatitis C. Vapor-heat sterilization of pooled plasma, the treatment of pooled plasma with solvents and detergents, and the use of recombinant clotting factors have markedly reduced this risk factor. Immunoglobulin products must undergo inactivation procedures and are tested for HCV RNA before release.

Occupational Exposure

Transmission of HCV poses a serious threat to health care workers and patients if infection control techniques or disinfection procedures are inadequate. Potential exposures include bloodborne contact of the eyes, mucous membranes, broken skin, or needle stick injuries. Health care workers account for 2 to 4% of acute cases of hepatitis C (DeCastro et al., 1999). Unfortunately, no vaccine or post exposure prophylactic treatment is available at this time.

Nosocomial Exposure

There is a strong association between HCV infection and hemodialysis, with 10 to 38% of hemodialysis patients developing chronic infection (Neff & Schiff, 1999). Nosocomial transmission among dialysis patients has been traced by genotyping, but the exact mechanism remains unclear, although the CDC (2000) has indicated that HCV transmission might occur among patients in a hemodialysis center because of incorrect implementation of infection control practices, particularly sharing of medication vials and supplies.

Maternal–Fetal Transmission

Unlike hepatitis B virus infections, in which maternal–fetal transmission is almost 90%, maternal–fetal HCV transmission is uncommon and occurs in fewer than 5% of cases (Neff & Schiff, 1999). According to Mast and Alter (as cited in Neff & Schiff, 1999), however, pregnant women co infected with HIV have a higher perinatal transmission rate, as do those with high serum levels of HCV. Transmission of HCV via breast milk has not been documented, although HCV-positive mothers should abstain from breastfeeding if their nipples are cracked or bleeding.

Household and Social Exposure

Family exposure via toothbrushes, razors, and manicure instruments must be considered, especially over the long run, since there are still a significant number of cases for which the cause of infection is unknown. Body piercing and tattooing must also be considered, as they involve percutaneous exposure and therefore might contribute to the spread of HCV.

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