Hepatitis C Virus

Hepatitis C virus (HCV) typically produces a symptom less liver infection that can lead, over decades, to severe liver disease, including cirrhosis and liver cancer. Most of those infected are unaware that they have the disease, and may serve as unknowing sources of transmission. HCV is the most common chronic blood-borne infection in the United States. An estimated 3.9 million Americans (1.8% of the population) have been infected with HCV, and most of those have chronic infections. The virus is transmitted primarily through direct injection of contaminated blood, most commonly by injecting drug use and, before 1992, by blood transfusion. No vaccine is available and no medications have proven effective in preventing infection after exposure, including exposure from accidental needle sticks.

After the acute infection, which produces jaundice or mild, nonspecific symptoms in 20-30% of patients, most people (75-85%) develop chronic infections, characterized by the persistence of viral RNA in the blood. Of those chronically infected, 60-70% have continuous or intermittent elevations of the liver enzyme alanine aminotransferase (ALT), indicating chronic active liver disease. Chronic cases may be diagnosed during blood donor screenings, from liver function tests performed for routine physical exams, or after onset of liver disease. The disease progresses very slowly; within 20 to 30 years after infection, 10% to 20% of those with chronic disease will develop cirrhosis, and 1% to 5%, liver cancer. HCV causes an estimated 8,000 to 10,000 deaths a year in the U.S., with more than $600 million in associated medical and work-loss costs.

Based on national estimates, approximately 300,000 Floridians are chronically infected with the hepatitis C virus, and approximately 2,000 new cases occur each year. However, because the initial stages of hepatitis C infection are either asymptomatic or associated only with mild symptoms, most new infections are not diagnosed. Hepatitis C was made a notifiable disease in Florida in July 1999. Prior to that time, all hepatitis C cases were classified as hepatitis non-A/non-B, of which about 100 were reported each year. Only 18 confirmed new cases of hepatitis C had been reported to the Florida Department of Health in 2004. Demographically, Florida cases are similar to the rest of the U.S.: incidence begins to rise in the teen years and peaks in 30-39 year olds, with similar rates among males and females.

The infection is diagnosed by detection of hepatitis C virus antibodies in blood, usually with an enzyme immunoassay (EIA) followed by a confirmatory recombinant immunoblot assay (RIBA) or polymerase chain reaction (PCR). Diagnosis can also be made by detection of viral RNA using gene amplification techniques.

Since screening procedures for blood donors were instituted in the early 1980s, the predominant mode of HCV transmission in the U.S. has been injecting drug use, which accounts for an estimated 60% of new cases. Beginning in 1989, the estimated incidence of HCV infection dropped dramatically in the U.S., from an average of 230,000 new infections a year before 1989 30,000 in 2003. The decrease is correlated with a decline in cases among injecting drug users; the reasons for the decline are unclear, but may be related to risk-reduction behaviors among illegal drug users or to saturation of the injecting drug user population.

Although the prevalence of HCV infection is higher among persons with multiple sexual

partners (9% among persons with 50 or more lifetime sexual partners), the risk of transmission between long-term steady partners is low. The risk of transmission from mother to child during birth is 5%-6%. Transmission among household contacts has been reported, but is uncommon. While hepatitis B is a well-recognized occupational hazard for health care workers, HCV appears to be less of a threat. Rates of HCV infection in health care workers are the same as or lower than rates in the general population, although unintentional needle stick injury still poses a risk. Previous studies of transmission have found no increased risk associated with medical, surgical or dental procedures; tattooing; acupuncture; ear piercing; or foreign travel, an indication either that these are not risk factors or that the excess risk is too low to detect.

Treatment with alpha-interferon and other drugs has low to moderate effectiveness in reducing ALT to normal levels and eradicating detectable viral RNA in serum. Treatment effectiveness depends greatly on the genotype of the virus; the most common genotype in the U.S is 1, which has the lowest response rate to therapy. Management of HCV infection also includes avoidance of alcohol and vaccination against hepatitis A and B. The effectiveness of treatment of infected persons in preventing transmission is unknown.

No vaccines are currently available to prevent HCV infection, and no medication has been approved for post-exposure prophylaxis. Prevention of HCV infection in the population currently depends on:

· screening of blood and tissue donors;
· risk-reduction counseling and services for high-risk groups like injecting drug users;
· screening (identification, testing, and counseling) of persons at high risk for HCV infection;
· improved population-based surveillance for acute and chronic HCV infection.

Screening programs should include persons who:

· ever, even once, injected illegal drugs, including those who injected once or a few times many years ago and do not consider themselves drug users;
· received clotting factor concentrates produced before 1987;
· were ever on chronic (long-term) hemodialysis;
· have persistently abnormal ALT levels;
· received organ transplants before July 1992;
· received transfusions of blood or blood components before July 1992;
· were notified that they received blood from a donor who later tested positive for HCV infection;
· were born to HCV-positive women;
· are healthcare, emergency medical, or public safety workers who had needle stick, sharps, or mucosal exposures to HCV-positive blood.

References

1. Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR 1998;47(No. RR-19).