State of Alaska Epidemiology Bulletin

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Bulletin No. 7
March 24, 1994
Hepatitis C

Hepatitis C virus (HCV) is responsible for most cases of sporadic, non-A, non-B (NANB) hepatitis. Prior to introduction of routine serologic testing for hepatitis C antibody, hepatitis C was responsible for the majority of cases of post-transfusion hepatitis.

The incubation period is usually 6-12 weeks (range: 2 weeks to 6 months). Onset of illness is usually insidious. Symptoms may include nausea, vomiting, anorexia, abdominal discomfort, and jaundice. Compared with hepatitis B, acute HCV is more likely to be mild, to have lower levels of liver enzymes (peak ALT = 200 to 600 IU/liter), and less likely to result in jaundice (25% of cases) (1). Severity ranges from subclinical infection to fulminating fatal cases (rare). Fifty to 70% of persons with acute HCV will develop chronic hepatitis with sustained or intermittent ALT elevation for more than 6 months after the acute episode (1,2). Patients with chronic HCV may have prolonged intervals of normal ALT values (months to years) and are at increased risk for cirrhosis and liver cancer.

Transmission of HCV occurs by percutaneous exposure to blood or blood products. Groups at highest risk include parenteral drug users, transfusion recipients, and dialysis patients. Sexual transmission of HCV has been documented but occurs less frequently than sexual transmission of hepatitis B. Perinatal transmission is rare. Approximately 40% of patients with acute NANB hepatitis who have hepatitis C antibody have no identifiable risk factors (2).

A commercial laboratory test using an enzyme linked immuno-assay (ELISA) technique to identify antibody to hepatitis C virus (anti-HCV) was licensed in 1990. In 1992, an improved ELISA test was licensed. In 1993, a recombinant immunoblot assay (RIBA) was licensed. As a supplement to the ELISA test, the RIBA may distinguish between true- and false-positive ELISA results (Table 1). Testing of blood donors for anti-HCV antibody reveals a prevalence of 0.2% to 2% in the U.S., Europe, Japan, and Britain (3). The Blood Bank of Alaska reports a prevalence of 0.2%.

Anti-HCV antibody tests are positive in the majority of patients with chronic hepatitis C. However, anti-HCV is not a reliable indicator of acute infection since 6 months or more may elapse between exposure to the virus or the onset of illness and detection of anti-HCV.

The specificity (likelihood that a person who does not have antibodies will test negative) of the improved ELISA test is 99.7%. The sensitivity (likelihood that a person who has anti-HCV antibody will test positive) of the second generation ELISA is higher than that of the original ELISA. False positive results do occur. Individuals with non-viral hepatitis may have a false-positive result. Interpretation of the ELISA and RIBA test results and recommendations for follow-up are presented in Table 1.

Currently there is no specific laboratory test available to confirm acute HCV infection. The ELISA and RIBA tests can identify anti-HCV positive individuals with **chronic** HCV infection.

Diagnosis of acute NANB hepatitis is based on the following criteria:

- elevated liver function tests (>2.5 times upper limits of normal)
- negative tests for acute hepatitis A and hepatitis B
- lack of evidence of non-viral causes of hepatitis

NANB hepatitis (hepatitis C is one example) is a reportable disease. All cases of **acute** NANB hepatitis should be reported to the Section of Epidemiology.

References

1. Genesca J, Esteban JI, Alter HJ. Bloodborne non-A non-B hepatitis: hepatitis C. Sem Liv Dis 1991; 11:147-63.
2. Alter MJ, Hadler SC, Judson FN. Risk factors for acute non-A, non-B hepatitis in the United States and associated with hepatitis C infection. JAMA 1990;17:223-5.
3. Chokephaibulkit K, Painter PC, Patamasucon P. Overview of hepatitis C. Lab Med 1992; 23:798-802.
4. Kleinman S, Alter H, Busch M, et al. Increased detection of hepatitis C virus (HCV)-infected blood donors by a multiple-antigen HCV enzyme immunoassay. Transfusion 1992;32:805-13.
5. CDC. Public health service inter-agency guidelines for screening donors of blood, organs, tissues, and semen for evidence of hepatitis B and hepatitis C. MMWR 1991; 40 (No. RR-4):13.

Table 1. Interpretation of anti-HCV antibody test results

Result of anti-HCV antibody test			Risk factors for HCV present?	
ELISA*	RIBA^{+}	ALT**		Interpretation/recommendation (See Reference 5, above)
Positive	Negative	Normal	No	Probable false positive, repeat ALT every 6 months for 1 year.
Positive	Positive	Normal	Yes or No	Repeat ALT at 3 and 6 months. Repeatedly normal ALT levels may indicate false-positive anti-HCV result; resolved acute hepatitis C; or chronic HCV with no or minimal liver disease.
Positive	Positive or not done	Elevated	Yes or No	Rule-out hepatitis A and B and non-viral causes of hepatitis. Repeat ALT at 3 and 6 months. Elevated ALT at 6 months suggests chronic hepatitis C, normal ALT at 6 months suggests resolved acute hepatitis C.
Positive	Positive or not done	Elevated ≥6 mos.	Yes or No	Chronic HCV. Consider liver biopsy and interferon therapy.

*ELISA - Enzyme linked immunosorbent assay

**ALT - Alanine amino-transferase

$^{+}$RIBA - Recombinant immunoblot assay

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