

Brief Note**Accidental Needlestick with Hepatitis C Virus in Hospital Personnel**

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HBV and HCV infection can be transmitted to hospital workers after accidental exposure to infected blood. The recent availability of assays for circulating antibodies to HCV has made epidemiological studies of HCV transmission possible. We report the results of an observational study of accidental exposure to infected blood among hospital personnel in our hospital.

Workers were asked to report all needle-stick injuries and any exposure to HCV-Ab positive blood to the Occupational Medical Service on the day of exposure. Serum samples were screened for anti-HCV (Ortho HCV ELISA test system) and serum GPT. A follow-up check for HCV-Ab and GPT was recommended at six months after exposure.

TABLE. 1. Mode of exposure in 60 cases of HCV-Ab contaminated blood in hospital personnel

Exposure	Doctor	Nurse	Technician	Total
IV needle	13	24	2	39(65.0%)
IM needle	0	10	0	10(16.7%)
Scalpel	2	2	0	4(6.7%)
Mucous contact	1	5	1	7(11.6%)

From April 1991 to April 1993, 60 employees (16 doctors, 41 nurses and 3 medical technicians) who had parenteral exposure to an anti-HCV positive source were reported. Table 1 shows the mode of exposure to HCV-positive blood, which was an intravenous (IV) needle in 39 cases (65.0%), an intramuscular (IM) needle in 10 cases (16.7%), scalpel (6.7%) in four cases and cutaneous and/or mucous contact with blood in 7 cases (11.6%). With the exception of one doctor with IV needle accident, no one presented with clinical evidence of hepatitis during the six month follow-up period and GPT levels were within the normal range. The only seroconversion occurred in a 25-year-old male anesthesiologist who suffered a needlestick injury from a needle used for an anti-HCV positive liver cirrhosis patient. Eight weeks later an elevated GPT and positive anti-HCV were noted and liver biopsy showed

acute hepatitis. He was treated with interferon for six months and completely recovered. In the same hospital setting, the risk of infection in personnel after needlestick injuries from HBsAg-positive sources between 1982 and 1987¹⁾ were compared with such HCV accidents (Table 2). The frequency of infectious accidents caused by an HBsAg positive source was 131 cases during five years, in which acute hepatitis was noted in five cases (3.8%). The results of the

TABLE. 2. Frequency of HCV and HBV needlestick accidents in hospital personnel and frequency of occurrence of acute hepatitis after needlestick

	HCV accidents (1991-1993)	HBV accidents (1982-1987)
1. Personnel		
Doctor	26.7%(16/60)	40.5%(53/131)
Nurse	68.3%(41/60)	49.6%(65/131)
Technician	5.0%(3/60)	9.9%(13/131)
2. Causes		
Needlestick	81.7%(49/60)	60.3%(79/131)
Scalpel	6.7%(4/60)	16.0%(21/131)
Mucous contact	11.6%(7/60)	23.7%(31/131)
3. Hepatitis	1.7%(1/60)	3.8%(5/131)

current study suggest that the risk of acute hepatitis after needlestick is comparatively lower in HCV accidents (1.7%) than in HBsAg accidents (3.8%). Concerning HCV transmission after needlestick exposure, Kiyosawa *et al*²⁾ reported that only 4 of 110 recipients of an anti-HCV needlestick developed hepatitis, which is exceedingly low compared with the 80% risk among recipients of anti-HCV whole blood and 67% risk found in HBe antigen-

TABLE. 3. Reported results of occupational exposure to needle-stick injuries. Low degree of HCV transmission is suggested.

Reporter	HCV-Ab(+) hepatitis by needlestick
1. Kiyosawa(1991)	4/110(3.6%)
2. Marranconi(1992)	3/108(2.8%)
3. Hernandez(1992)	0/81 (0 %)
4. Mitsui(1992)	7/159(4.4%)
5. The present study	1/60 (1.7%)

positive donors. Table 3 shows the incidence of hepatitis by needlestick accidents for which the frequency of transmission is from 0% to 4.4%, varying with reports.^{2,3)} Mitsui *et al*³⁾ reported that 7 out of 159 cases of needlestick exposure developed hepatitis, but their clinical course were transient. In contrast, Marranconi *et al*³⁾ reported that 3 out of 108 cases became chronic active hepatitis, which is a serious risk for helth-care personnel. Although needlestick inoculation may inject 10^5 to 10^6 fewer HCV virions than does transfusion of a unit of HCV-positive blood, HCV transmission does occur and appropriate care should be taken to protect healthcare workers. In conclusion,

accidental HCV needlestick should be followed up for at least six months, and serum GPT and the second-generation anti-HCV ELISA test are recommended for all infected personnel.

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