SHORT REPORT

Compliance with follow-up after occupational exposure to hepatitis C

Sian Williams¹, Valerie Libotte¹ and Mary Ramsay²

Background
Accidental percutaneous exposure to blood containing hepatitis C virus (HCV) is reported by health care workers more frequently than exposure to human immunodeficiency and hepatitis B virus. The transmission rate following such an exposure is ~1.9%. Little is known about the attendance rate of such staff for follow-up testing following exposure to HCV.

Aim
To determine whether our follow-up programme for staff exposed to hepatitis C would allow the early detection and treatment of infected staff members.

Method
We reviewed all staff exposures to hepatitis C reported to the occupational health department of a London teaching hospital over a 8-year period.

Results
Of 105 exposures, 21% of staff attended for early (6 or 12 weeks) and late (26 weeks) post-exposure follow-up. Thirty-seven per cent attended early follow-up only and 1% attended late having not attended early follow-up. Forty per cent did not attend any follow-up appointments with us.

Conclusion
With the availability of effective treatment for early HCV infection, it is vital that occupational health departments encourage staff to attend at least for early follow-up. Access to HCV-RNA testing at this early stage should allow detection and early treatment of the small proportion who seroconvert.

Key words
Compliance; hepatitis C; occupational exposure.

Introduction
Accidental exposure of health care workers to the blood or body fluid of patients infected with hepatitis C is reported more frequently than exposure to either hepatitis B or human immunodeficiency virus [1]. Transmission following percutaneous exposure to hepatitis C occurs in 1.9% of cases [2]. Although there is no vaccine or effective post-exposure prophylaxis, evidence suggests that early treatment with high-dose interferon can result in viral clearance in >90% of recently infected individuals [3]. This emphasizes the importance of close and timely follow-up of exposed workers [4].

Data collected by the Health Protection Agency (HPA) [1] show that hepatitis C seroconversions following occupational exposure to hepatitis C virus (HCV) have occurred in UK health care workers. Of nine cases reported to their surveillance scheme since it included hepatitis C exposures in 1997, eight tested positive for HCV-RNA within 9 weeks of the exposure incident. (The ninth was not tested until 16 weeks post-exposure). The majority started treatment and all were reported to have cleared the virus (see Table 1).

Our London teaching hospital began testing source patients for hepatitis C in 1991. Exposed staff were educated about the small seroconversion risk and the medical and occupational implications of hepatitis C infection. Staff were offered, and encouraged to attend, follow-up testing for hepatitis C at 6, 12 and 26 weeks after exposure.

To determine whether our follow-up programme would allow the early detection and treatment of infected staff members, we reviewed all staff exposures to hepatitis C reported to our occupational health department over an 8-year period.

Method
We undertook a retrospective cohort study of staff exposed to hepatitis C between November 1991 (when we began source patient testing for hepatitis C) and December 1999. Of 121 hepatitis C-positive exposures reported by staff to the occupational health department during this period, we excluded 16 because of missing data, leaving 105 cases in the study.

¹Occupational Health and Safety Unit, Royal Free Hospital, London NW3 2QG, UK.
²Communicable Diseases Surveillance Centre, Health Protection Agency, 61 Colindale Avenue, London NW9 5EQ, UK.

Correspondence to: Sian Williams, Occupational Health and Safety Unit, Royal Free Hospital, Pond Street, London NW3 2QG, UK. Tel: +44 20 7830 2509/2510/2511; fax: +44 20 7830 2512; e-mail: sian.williams@royalfree.nhs.uk

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We have dichotomized attendance for the three follow-up tests into early (6 or 12 weeks) and late (26 weeks). This is because staff often delayed or brought forward appointments to accommodate work commitments or annual leave, leaving no clear cut-off between the first and second test.

Results

Of the 105 exposures, 74 (70%) were percutaneous. In 91 (87%) of these exposures, the source patient’s hepatitis C status was known at the time of the incident and in 14 (13%) of these exposures, the source patient was determined as being hepatitis C positive on testing following the incident. These 14 cases represent 2% of the 644 source patients identified during the study period whose hepatitis C status was unknown at the time of the incident and who agreed to be tested.

Of the 105 exposed staff, 62 (59%) attended for early follow-up. Of these, only 23 (22%) also attended for late follow-up. Thirty-nine (37%) staff attended early follow-up only, and one (1%) attended late follow-up having not attended early follow-up (see Figure 1).

Of the 42 (40%) cases with no follow-up, six were known to have left the hospital, in six the exposure incident was considered minimal risk, nine declined follow-up and for the remaining 21 the reason for non-attendance was not recorded.

Discussion

In this series, although the majority of exposures were from source patients known to be HCV positive, a significant number was discovered as a result of post-exposure testing and the prevalence in those tested was relatively high at 2%. This compares with an estimated prevalence in England of ~0.5%, based on anti-HCV seroprevalence studies conducted by the HPA on specimens from 1995/96 [5]. Although this high prevalence probably reflects the specialist liver interest and geographical location of our hospital (London), it does support the 1999 guidelines that recommend routinely seeking consent to test all source patients for HCV [4].

Forty per cent of exposed staff did not attend for any follow-up tests, and only around one-fifth attended for both early and late follow-up. A larger number, however, attended at the early stage and so concentrating on early follow-up may help to maximize compliance. At this stage, however, antibody to hepatitis C may not be detectable [6]. It is vital, therefore, that occupational health departments have access to HCV-RNA testing, to allow early detection of infection and treatment. In addition, early testing will offer some reassurance, at an early stage, to the vast majority of health care workers who are not going to seroconvert.

A substantial proportion of staff did not attend at all. One explanation for this low attendance could be the high staff turnover of up to 30% annually in our hospital in the 1990s. It is possible that some of our non-attenders

<table>
<thead>
<tr>
<th>Case</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>First positive HCV-RNA test (weeks after exposure)</td>
<td>16a</td>
<td>8.3</td>
<td>4</td>
<td>8</td>
<td>7.1</td>
<td>6.3</td>
<td>6.7</td>
<td>7.7</td>
<td>6.1</td>
</tr>
<tr>
<td>First positive HCV antibody test (weeks after exposure)</td>
<td>17.4</td>
<td>8.3</td>
<td>12</td>
<td>8</td>
<td>7.1</td>
<td>6.3</td>
<td>12</td>
<td>7.7</td>
<td>6.1</td>
</tr>
<tr>
<td>Treatment commenced</td>
<td>DK</td>
<td>DK</td>
<td>DK</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cleared virus</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

DK = don’t know.
aHealth care worker was not tested prior to 16-week post-exposure.

Figure 1. Serology results and response to treatment for nine UK health care workers whose seroconversion to HCV following exposure to HCV-positive patients was reported to the HPA national enhanced surveillance scheme for health care workers with significant exposure to human immunodeficiency virus, HCV and hepatitis B virus.

sought follow-up testing from subsequent employers. Some staff may not perceive the risk of transmission to be sufficiently high. Some may be worried about the implications for their career although during the period of the study there were no restrictions on hepatitis C infected health care workers unless they had transmitted to a patient. Since 2002, this restriction has been extended, preventing any hepatitis C infected health care worker from performing exposure-prone procedures.

We now educate all exposed staff about the evidence for successful treatment of recently infected individuals. Such evidence may encourage staff compliance and should alert exposed staff and their occupational health departments to the importance of adequate follow-up.

### Key points
- Forty per cent of our cohort of staff exposed to HCV did not attend for any follow-up testing.
- For staff who did attend follow-up, there were nearly three times as many in the early follow-up group compared with the late follow-up group.
- With serological tests for HCV-RNA allowing early detection of seroconversion, and evidence of treatment success in the acute phase of hepatitis C infection, occupational health units should put their efforts into encouraging all exposed staff to attend their early follow-up appointment.

### Conflicts of interest
None declared.

### References