Prevalence of hepatitis C among injecting drug users attending drug clinics

Patrick O’Connor, Graeme Judson, Richard A Loan, Geoff Robinson

ABSTRACT

BACKGROUND: Chronic hepatitis C (HCV) infection is an important public health issue in New Zealand, and an increasing cause of advanced liver disease.

METHOD: This study examined the 2015 data on hepatitis C serology in patients on opiate substitution at four Alcohol and Drug Services, as well as rates of referral and responses to treatment for HCV.

RESULTS: Among 579 patients tested, 439 (76 %) were positive for HCV antibody. For a subgroup of patients, those who reported their first use of injecting since 2010, the prevalence of HCV antibody was 48%. Among 405 patients with PCR/viral load test on file, 206 had a positive result when most recently tested. In all, 191 patients were referred for treatment, and of the 91 treated, 68 achieved viral clearance. Overall, it was found that 131 (32%) patients with a PCR/viral load test on file had cleared the HCV without treatment, as indicated by at least one negative PCR.

CONCLUSIONS: HCV remains highly prevalent in injecting drug users attending these clinics, with no important reduction in infection rates from past studies. There appears to be considerable rates of spontaneous viral clearance. Nevertheless, it remains important, from individual and public health perspectives, to refer patients for treatment, which is becoming increasingly effective and safe.

Chronic hepatitis C (HCV) infection is a major public health concern. The global prevalence of anti-HCV has been estimated at 1.7%, or 115 million cases, with 80 million of these being viraemic (RNA positive). HCV prevalence in injecting drug users (IDU) is known to be particularly high. Programmes for screening and the promotion of increasingly effective and safer treatments are encouraged by the Ministry of Health and the Hepatitis Foundation in New Zealand. There are estimates of up to 50,000 of the New Zealand population having been infected, primarily through past intravenous (IV) drug use, either sporadic or addictive.

Although Human Immunodeficiency Virus (HIV) has been well contained in New Zealand IDU, presumably through education and needle/syringe provision, there has been much less impact on the transmission of HCV in injecting drug users.

This audit was prompted by an interest in the current situation regarding screening and treatment for injecting drug users who choose to access drug clinics where they are primarily treated with opioid substitution treatment (OST), which of itself may be an important factor in reducing HCV transmission.

Methods

A simple data collection form was distributed to Medical Officers in lower North Island drug clinics. This recorded individual patient demographics, year of first injecting drugs, hepatitis C testing, and referral and results of HCV treatment by gastroenterology or infectious diseases services.

For logistical reasons, various clinics adopted different approaches to the data gathering. There was completion of the data for nearly all current patients being prescribed OST as of January to March 2015 for Wanganui and Palmerston North. Hawkes Bay and Taranaki completed the form for patients attending a medical appointment during this time period, which accounted for 75% of their clinic-supervised...
OST patients. Patients prescribed OST by their GP and authorised by the clinic were excluded from this study.

Results

The serology and viral load results of the study are shown in Table 1.

For the 579 patients tested from all drug clinics, it was found that 439 (76%) were positive for HCV antibody and 140 (24%) were negative.

The results of the most recent HCV Polymerase Chain Reaction (PCR) available to the clinic showed that 206 were positive and 199 were negative. There were no results available for 34 antibody-positive patients.

It was found that 68 patients had achieved a negative HCV PCR following antiviral treatment. A further 23 had treatment but without successful outcome.

Thus, of the 119 negative PCRs, 68 were the result of treatment, and 131 other patients had at least one negative PCR, suggesting possible spontaneous viral clearance. This means that of the 405 patients who were antibody positive and had a subsequent viral load test, 131 (32%) have cleared the infection without treatment.

Referral to specialist services for treatment of hepatitis C

Across the four clinics it was found that 91 patients had treatment, and 68 were successful in terms of subsequent negative viral load.

We also collected information about the date of onset of intravenous (IV) use from three of the clinics (Taranaki, Hawkes Bay and Wanganui). The patients were divided into cohorts based on the 5-year period in which IV use started, and when they may have been first exposed to the hepatitis C

Table 1: Results of hepatitis C testing at drug clinics.

<table>
<thead>
<tr>
<th></th>
<th>Wanganui</th>
<th>Palmerston North</th>
<th>Hawkes Bay</th>
<th>Taranaki</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>89</td>
<td>269</td>
<td>88</td>
<td>139</td>
<td>585</td>
</tr>
<tr>
<td>Male/Female</td>
<td>57/32</td>
<td>157/112</td>
<td>52/36</td>
<td>69/70</td>
<td>335/249</td>
</tr>
<tr>
<td>HCV Antibody *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>77</td>
<td>206</td>
<td>53</td>
<td>102</td>
<td>439</td>
</tr>
<tr>
<td>Negative</td>
<td>10</td>
<td>63</td>
<td>31</td>
<td>36</td>
<td>140</td>
</tr>
<tr>
<td>Most Recent Viral Load Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>24</td>
<td>88</td>
<td>37</td>
<td>57</td>
<td>206</td>
</tr>
<tr>
<td>Negative</td>
<td>49</td>
<td>95</td>
<td>17</td>
<td>38</td>
<td>199</td>
</tr>
<tr>
<td>Successfully treated by antiviral</td>
<td>15</td>
<td>33</td>
<td>6</td>
<td>14</td>
<td>68</td>
</tr>
</tbody>
</table>

*HCV antibody results not available for six patients

Table 2: Data on referral treatment.

<table>
<thead>
<tr>
<th></th>
<th>Wanganui</th>
<th>Palmerston North</th>
<th>Hawkes Bay</th>
<th>Taranaki</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number referred</td>
<td>36</td>
<td>83</td>
<td>31</td>
<td>41</td>
<td>191</td>
</tr>
<tr>
<td>Patient declined or did not attend</td>
<td>6</td>
<td>18</td>
<td>9</td>
<td>8</td>
<td>41</td>
</tr>
<tr>
<td>Reviewed by specialist but not treated</td>
<td>7</td>
<td>22</td>
<td>15</td>
<td>15</td>
<td>59</td>
</tr>
<tr>
<td>Number treated</td>
<td>23</td>
<td>43</td>
<td>7</td>
<td>18</td>
<td>91</td>
</tr>
<tr>
<td>Viral clearance</td>
<td>15</td>
<td>33</td>
<td>6</td>
<td>14</td>
<td>68</td>
</tr>
<tr>
<td>PCR positive after treatment *</td>
<td>8</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>22</td>
</tr>
</tbody>
</table>

*1 missing because lost to follow-up.
virus. Hepatitis C antibody prevalence was calculated for each cohort.

This demonstrates a steady decline in prevalence. Among those who first used IV before 1985, the hepatitis C antibody prevalence level is at least 90%. Among those who report first injecting use since 2010, the prevalence is 48%.

Discussion

The findings of this study regarding hepatitis C serology are similar to those found in a previous New Zealand study of injecting drug users attending the Wellington Drug Clinic in 1995. The Wellington study found that 77% of patients were antibody positive, and that 53% of those who had started IV use within the previous 4 years were antibody positive. This present study has found a 76% overall prevalence of HCV antibody among OST patients, and that 53% of those who had started IV use within the previous 4 years were antibody positive. While the locations are different, the overall picture does not appear to have changed greatly over the past 20 years.

There are other estimates of HCV antibody prevalence among New Zealand IV drug users based on serology surveys of patients of needle exchange programmes. There have been three reported sets of results: 1997 (53%), 2004 (70%), and 2009 (52%). Some of the observed differences, especially 1997–2004, may be influenced by differences in median age and years of IV use among participants. The 2004 and 2009 results indicate that the seropositive rate among those who have used for less than 3 years was about 15%.

Our cohort analysis indicates that recent initiates to IV use have seroprevalence about 30% less than those who started 20 years earlier. Comparison with the 1995 study suggests that prevalence among new users then was similar to that found today. This suggests that the impact of measures such as needle exchange on new users is similar now to the impact in the early 1990s.

This study found that 32% of those known to be antibody positive, and with at least one viral load result, are now viral RNA negative, with no history of treatment, indicating spontaneous clearance. A prospective Swedish study of IV users who seroconverted over a 3-month period, found that 30% were viral RNA negative a year later. Grebely et al, in an international collaboration following 632 cases of acute hepatitis C, found 25% clearance 12 months after infection. A Chinese study which followed-up 96 patients infected via a blood donor, found that after about 10 years, 40% were viral RNA negative. Overall, our findings are consistent with published research, though some authorities quote lower clearance rates. For instance, information on the Centers for Disease Control and Prevention website says that “for 70%–85% of people who become infected with hepatitis C, it becomes a
long-term, chronic infection”, which indicates a spontaneous clearance rate of 15–30%.\textsuperscript{15}

On the basis of those already treated, and those who are viral RNA positive and untreated, an estimated 274 patients have been eligible for treatment. Of these, 191 have been referred and 91 have actually been treated. There are a number of reasons why referral may not happen, and why treatment may not be offered. These include: perceptions of ongoing IV use and risk of re-infection; compliance problems; patient perception that side effects outweigh benefits; poorer outcomes for some genotype and IL28B profiles; and awareness that safer and more effective treatments will be available in future.

Nevertheless, the overall treatment rate of 33%, mostly in the past 10 years, appears to compare well with the estimate of Gane et al that 1.8% of diagnosed patients are currently treated per annum.\textsuperscript{4}

A significant number of patients (184) are viral load positive and have not been treated. There may be others, as there were 37 antibody positive patients who have not yet been tested for viral load. There has been a call to increase access to treatment of HCV in community clinics, which will benefit individual patients and will influence the HCV prevalence.\textsuperscript{4,16}

The sample size of 585 patients represents about 12% of all opiate substitution patients in New Zealand. If our figures are extended to the country as a whole, then we estimate about 2,000 OST patients across the country are viral load positive and have not been treated.

It is of interest to speculate whether these findings shed light on the possible burden of hepatitis C in the wider community. Communication with local HCV treatment services indicates that 30–40% of all patients treated for hepatitis C over the past 5 years have been OST patients. This may indicate the proportion of diagnosed hepatitis C cases who are on OST, which in turn would yield an estimate of the total number of diagnosed hepatitis C cases. Gane et al suggest that hepatocellular carcinoma statistics, comparing previously diagnosed and undiagnosed hepatitis C, may indicate the relative proportion of diagnosed and undiagnosed hepatitis C in the community.\textsuperscript{4} Linking these various sources of information may help to estimate the total number of hepatitis C infections in the community and the future burden on treatment services.

This study shows the continuing high prevalence of hepatitis C among OST patients, and estimates a spontaneous viral clearance rate of 32%. Many eligible patients have been referred for treatment, and 36% of these have achieved the goal of successful treatment. Many of those referred (52%) did not progress to treatment. Future treatments which are more acceptable and effective will improve compliance and outcome for individuals still infected with hepatitis C.

Competing interests: Nil

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