The Neuropsychological and Neurologic Impact of HCV Co-Infection in HIV-Infected Subjects

David B. Clifford, M.D., Scott R. Evan, Ph.D, Yijun Yang, Sc.D, Roy M. Gulick, M.D., and the A5097s Team.

Washington University School of Medicine, St. Louis, Missouri (DBC), Harvard School of Public Health, Boston, Massachusetts(SRE, YY), and Weill Medical College Cornell University, New York, New York(RMG).

David B. Clifford, M.D.
Department of Neurology
Washington University School of Medicine
C.B. 8111, 660 South Euclid Avenue
Saint Louis, Missouri 63110
Email: cliffordd@neuro.wustl.edu
Telephone: 314-362-9731
FAX: 314-454-1378
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ABSTRACT

Objective: To evaluate the effect of HCV/HIV coinfection on neuropsychological (NP) performance and neurologic status in HIV/HCV treatment naïve HIV-1 infected subjects.

Design: Cross sectional study of HCV/HIV treatment naïve HIV subjects using baseline data from an HIV therapy trial.

Methods: Hepatitis C Virus (HCV) status was determined by the presence of anti- HCV antibodies. Neuropsychological function was evaluated by Trailmaking tests (parts A and B), and the Digit Symbol task. Depression was assessed with the Center for Epidemiologic Studies-Depression Scale (CES-D). Sleep quality was evaluated by the Pittsburgh Sleep Quality Index (PSQI) and anxiety by the State-Trait Anxiety Inventory for Adults. Results were compared between HCV+/HIV+ and HCV-/HIV+ groups.

Results: 264 patients enrolled in A5097s had HCV status data available at entry, 30 HCV+ and 234 HCV-. HCV+ and HCV- groups were comparable except that HCV+ had higher prevalence of IV drug use and lower educational level (P<0.001). HCV+ group had significantly lower NP performance overall, (p<0.001). Among three subtests, HCV+ group differed significantly on Digit Symbol task, (p<0.001). Of the HCV+ subjects, 57% had significant depressive symptomatology, whereas only 32% of HCV- subjects did, p=0.013. Group differences resulted from significantly higher scores on the “somatic problem” portion of the scale (p<0.001) and the depressed affect (p=0.006). Multivariate modeling supported an association between HCV infection status with test performance in the Digit Symbol task and mood parameters even when controlling for potentially confounding variables. Marginal differences were noted with respect to symptoms (p=0.064) and global (sleep p=0.053). No differences were noted with respect to anxiety.
Conclusions: Our findings suggest that HCV/HIV coinfection has an adverse impact on NP performance, particularly in the Digit Symbol task. HCV may also be associated with depressed mood, particularly with somatic problems. It is recognized that confounding contributors to NP performance are difficult to exclude, however exploratory modeling supports the association between HCV infection status with NP performance and depressed mood.

Table 3: Classification Summary

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic</th>
<th>HCV (+ N=30)</th>
<th>HCV (- N=234)</th>
<th>p-value(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic Impairment[^2]</td>
<td>N (%)</td>
<td>10 (33)</td>
<td>59 (25)</td>
<td>0.380</td>
</tr>
<tr>
<td>Clinically Significant Anxiety[^3]</td>
<td>N (%)</td>
<td>24 (80)</td>
<td>201 (86)</td>
<td>0.406</td>
</tr>
<tr>
<td>Depressive Symptomatology[^4]</td>
<td>N (%)</td>
<td>17 (57)</td>
<td>74 (32)</td>
<td>0.013</td>
</tr>
<tr>
<td>Poor Overall Sleep Quality[^5]</td>
<td>N (%)</td>
<td>17 (57)</td>
<td>104 (44)</td>
<td>0.164</td>
</tr>
</tbody>
</table>

(1) Fisher’s exact test
(2) 1 SD below norm in any two NP tests (TMA, TMB, and DSY) or 2 SDs below norm in at least one NP test
(3) Total anxiety score ≥ 40
(4) Total depression score ≥ 16
(5) Total sleep score >5

95% CI for the difference between proportion of HCV+ and HCV- subjects with depressive symptomatology?

n1=30, n2=234
proportion of HCV+ subjects with depressive symptomatology = 0.567
proportion of HCV- subjects with depressive symptomatology = 0.316

95% CI = (0.064, 0.438)