Changing Landscape of Liver Transplantation in the Post-DAA and Contemporary ART Era

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Background

• Hepatitis C virus (HCV) and HIV coinfection is associated with 23-fold higher risk of progression of hepatocellular carcinoma and 6-fold higher risk of progression to end-stage liver disease, compared to HCV infection alone.

• HIV infection is reported to be an independent predictor of mortality in HCV-positive liver transplant recipients.

• Post-transplant, HIV-HCV coinfected recipients have inferior survival rates, largely secondary to hepatitis C recurrence and associated mortality and graft failure.

• Combination antiretroviral therapy (ART) has improved outcomes of solid organ transplantation in persons living with human immunodeficiency virus (PLWH).

• Outcomes in HIV-HCV coinfected transplant recipients have not been evaluated in the current DAA era.

Aims

• Evaluate 1-year patient mortality in liver transplant recipients stratified by HIV and HCV infection status compared to their uninfected counterparts since 2000.

• Evaluate risk factors associated with 1-year mortality in all liver transplant recipients undergoing transplantation after 2015 to reflect the changing trends of transplant outcomes in the current era of DAA therapy and combination antiretroviral therapy.

Methods

• UNOS database was utilized to identify deceased donor liver transplant recipients between January 1, 2000 and September 30, 2020, and stratify them by HIV and HCV infection status.

• Kaplan-Meier curves, univariate and multi-variate logistic regression analyses were used for outcomes analysis and evaluation of risk factors.

• Inclusion criteria
  • Adult patients >/= 18 years
  • Primary deceased donor liver transplantation
  • Documented pre-transplant HIV and HCV serologies

• Exclusion criteria:
  • Missing or unknown results of HIV and HCV serologies pre-transplant
  • Missing or incomplete 1-year follow-up data
  • Patients re-listed for transplant
  • Living-donor liver transplant
Results

- A total of 85,730 persons were included in the study.
- One-year and 5-year patient survival improved (93% and 80%, respectively) for all liver transplants performed after 2015.

- For HIV/HCV coinfected recipients, survival improved significantly from 78% (pre-2015) to 92% (post-2015). (Figure 2)

- Multivariate regression analyses identified advanced recipient age (OR 1.02, CI 1.01 – 1.02, p<0.001), black race (OR 1.34, CI 1.17 – 1.54, p<0.001), recipient diabetes mellitus (OR 1.18, CI 1.08 – 1.28, p<0.001) and decompensated cirrhosis as risk factors associated with higher one-year mortality.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>OR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.02</td>
<td>1.01 - 1.02</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Black Race</td>
<td>1.34</td>
<td>1.17 - 1.54</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Recipient Diabetes</td>
<td>1.16</td>
<td>1.08 - 1.28</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Donor Hypertension</td>
<td>1.05</td>
<td>0.96 - 1.15</td>
<td>0.3</td>
</tr>
<tr>
<td>Donor Diabetes</td>
<td>1.12</td>
<td>0.99 - 1.27</td>
<td>0.077</td>
</tr>
<tr>
<td>Acute at time of transplant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td>1.07</td>
<td>0.95 - 1.20</td>
<td>0.3</td>
</tr>
<tr>
<td>Moderate</td>
<td>1.08</td>
<td>0.96 - 1.23</td>
<td>0.2</td>
</tr>
<tr>
<td>Encephalopathy at transplant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 1-2</td>
<td>1.14</td>
<td>1.03 - 1.27</td>
<td>0.012</td>
</tr>
<tr>
<td>Grade 3-4</td>
<td>1.84</td>
<td>1.61 - 2.10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>TIPS at transplant</td>
<td>1.1</td>
<td>0.97 - 1.24</td>
<td>0.14</td>
</tr>
<tr>
<td>Portal vein thrombosis</td>
<td>1.34</td>
<td>1.21 - 1.49</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

- Detectable HCV viral load at transplant was not associated with poorer outcomes (OR 1.03, CI 0.77 – 1.35, p=0.9), and neither was presence of HIV/HCV coinflection at transplant (OR 1.1, CI 0.56 – 2.08, p=0.7).
Conclusion

- Liver transplant outcomes in HIV/HCV coinfected liver transplant recipients have significantly improved since 2015 in the setting of highly effective ART and DAA therapy. Presence of HIV, HCV and HIV/HCV coinfection do not render higher mortality risk in liver transplant recipients in the current post-DAA and cART era.

- HCV viremia at the time of transplant did not influence survival – hence it is safe to withhold HCV treatment until after transplant in order to avoid false-improvement in MELD score that can potentially delay transplantation (**MELD purgatory effect**).

Thank you!

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