Incorporation of Donor Liver Macrovesicular Steatosis into SRTR Risk Adjustment Models for Deceased Donor Yield and Post-Transplant Outcome

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Disclosures

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Background

• Macrøvesicular steatosis is a known predictor of graft failure
  • Risk of PNF and early allograft dysfunction
  • Considered extended criteria, or “marginal” livers

• SRTR had not traditionally included liver biopsy results in risk adjustment models
  • Not always available
  • Not interpreted or reported consistently

• But biopsy results may influence outcomes and decisions regarding organ acceptance
Background

Aims
1. To evaluate the impact of donor macrovesicular steatosis on organ yield and graft outcome after liver transplantation
2. To evaluate the effect of incorporating this variable into SRTR risk adjustment models for organ yield and program-specific graft outcomes
Methods

- Scientific Registry of Transplant Recipients
  - All donors, waitlisted candidates, and transplant recipients in the United States 2017-2019
  - Levels of macrovesicular steatosis categorized into: 0-10%, 11-30%, 31-50%, ≥50%, and not available
  - Other covariates aligned with current SRTR risk-adjustment models
- Impact of macrovesicular steatosis on:
  - Deceased donor yield (# of transplanted livers recovered)
    - Interaction between DCD and macrovesicular steatosis
  - 1-year posttransplant graft survival
- Multivariable logistic regression and Cox models with LASSO
Results

Increasing levels of steatosis on donor liver biopsy predicted lower organ yield

<table>
<thead>
<tr>
<th>Donor characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (SD)</td>
<td>41 (17)</td>
</tr>
<tr>
<td>Sex (%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1305 (60.5)</td>
</tr>
<tr>
<td>Female</td>
<td>8507 (39.5)</td>
</tr>
<tr>
<td>Cause of death (%)</td>
<td></td>
</tr>
<tr>
<td>Anoxia</td>
<td>9319 (43.2)</td>
</tr>
<tr>
<td>Trauma</td>
<td>5865 (27.2)</td>
</tr>
<tr>
<td>CVA/Stroke</td>
<td>5717 (26.5)</td>
</tr>
<tr>
<td>Other</td>
<td>658 (3.1)</td>
</tr>
<tr>
<td>Donation after circulatory death (SD) (%)</td>
<td>4329 (20.1)</td>
</tr>
<tr>
<td>Macrosteatosis</td>
<td></td>
</tr>
<tr>
<td>Not available</td>
<td>14185 (65.8)</td>
</tr>
<tr>
<td>0-10%</td>
<td>5096 (23.6)</td>
</tr>
<tr>
<td>11-30%</td>
<td>1269 (5.9)</td>
</tr>
<tr>
<td>31-50%</td>
<td>721 (3.3)</td>
</tr>
<tr>
<td>≥50%</td>
<td>288 (1.3)</td>
</tr>
</tbody>
</table>
Results

Higher risk of posttransplant graft failure and mortality using donor livers with 11-30% or >30% macrovesicular steatosis
**Results**

Previous model versus updated model (+ macrovesicular steatosis)

Impact on OPO-specific deceased donor yield estimates

Impact on program-specific graft outcome, current model
Conclusions

• Macrovesicular steatosis is associated with lower organ yield and reduced graft survival
• Incorporating biopsy results into current risk adjustment models may reduce disincentives to use these organs
• This risk factor has been added to the SRTR risk adjustment models for OPO and program-specific assessments and may facilitate more judicious use of organs with macrovesicular steatosis
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