Early-Stage Hodgkin's Disease: The Utilization of Radiation Therapy and Its Impact on Overall Survival

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Background

• National Cancer Database (NCDB)
  ▪ Joint program of the Commission on Cancer and the American Cancer Society
  ▪ Prospectively collected, Nationwide database covering 75% of all newly diagnosed cancers (>1,500 U.S. hospitals)
  ▪ Not population-based, geographically limited dataset
  ▪ Reflects contemporary treatment programs
  ▪ RT specifics available for analysis (modality, dose, fx, volume/site)
Methodology

- Evaluated clinical features and survival outcomes in entire cohort.
- Survival was estimated using the Kaplan-Meier method.

Hodgkin’s Disease, Stage I/II, diagnosed 1998-2011 (N = 41,420)
- Median f/u = 6.4 years
- Median age = 37 years (range: 18-90)
- Multi-agent chemotherapy given to 96% of the pts

- Did NOT receive Radiation Therapy (N = 20,897; 51%)
- Received Radiation Therapy as part of CMT (N = 20,523; 49%)
  - Median RT dose = 30.6 Gy
Results

- Clinicopathologic Characteristics & Association of Radiation Therapy
  - Insurance Status:
    - Uninsured/Medicaid pts were less likely to receive RT ($p<0.001$)
  - Facility type:
    - Academic/Research facilities were less likely to receive RT than Comprehensive cancer centers ($p<0.001$)
  - Socioeconomic Factors:
    - Patients with lower education (%not HS grad), and lower income (med. household) were less likely to receive RT ($p<0.001$)

- As a surrogate for treatment failure, the omission of RT was associated with higher rates of salvage transplant ($p=0.04$)
Results

Overall Survival by RT Use

<table>
<thead>
<tr>
<th>Time Since Diagnosis (Years)</th>
<th>Proportion Surviving</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>1</td>
<td>90%</td>
</tr>
<tr>
<td>5</td>
<td>80%</td>
</tr>
<tr>
<td>10</td>
<td>70%</td>
</tr>
<tr>
<td>15</td>
<td>60%</td>
</tr>
</tbody>
</table>

HR = 0.51; 95% CI, 0.48-0.54, p<0.00001

Number at risk:

- No RT delivered: 20547, 7955, 1962, 0
- RT delivered: 20441, 10743, 3064, 1

84% 76%
### RT Utilization

#### Reason for No Radiation

<table>
<thead>
<tr>
<th>Reason</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation was not part of the planned initial treatment strategy</td>
<td>18,482</td>
<td>86.30</td>
</tr>
<tr>
<td>Radiation was contraindicated</td>
<td>185</td>
<td>0.86</td>
</tr>
<tr>
<td>Radiation recommended but not administered</td>
<td>1,041</td>
<td>4.86</td>
</tr>
<tr>
<td>Radiation recommended but refused by the patient</td>
<td>279</td>
<td>1.30</td>
</tr>
<tr>
<td>Radiation recommended, unknown whether delivered</td>
<td>872</td>
<td>4.07</td>
</tr>
<tr>
<td>Unknown if recommended or administered</td>
<td>561</td>
<td>2.62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21,420</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Conclusion

• Largest contemporary dataset of patients with early-stage HD (n=41,420)

• The use of RT is associated with improved 10-yr OS
  ▪ 84% vs. 76%
  ▪ HR=0.51
  ▪ p<0.00001

• Utilization of RT has decreased by 15% (56 → 41%) from 1998 to 2011
  ▪ Not part of initial treatment strategy

• We have identified specific factors associated with underutilization of RT, which may be targeted to improve patient access to care:
  ▪ Socioeconomic
  ▪ Insurance status
  ▪ Facility type