Incorporation of machine learning tools to predict global outcomes for patients with relapsed and refractory peripheral T and NK/T-cell lymphomas in the contemporary era


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BACKGROUND

Comparative efficacy of single agents (SA) to combination chemotherapy (CC) for patients with relapsed and refractory (RR) T-cell lymphomas (TCLs) remains poorly defined. Here, we present preliminary results of an international collaborative study spanning multiple centers across 6 continents with diverse histological epidemiology, demographics, treatment patterns and drug access.

OBJECTIVES

Primary objectives:

- Define global overall survival (OS) of RR patients receiving 1st retreatment and beyond
- Compare OS by country, histological subtype, 1st retreatment (CC vs. SA), diagnosis period, PR1 scores, relapsed vs. refractory
- Contrast ability to bridge to stem cell transplantation for SA relative to CC

Exploratory objective:

- Incorporate novel machine learning tools such as synthetic interventions to build predictive models of response to SA and CC

METHOD

This is an ongoing retrospective study estimated to cumulate 500 additional patients in 2020 and to continue for another year to 2021. Survival is estimated and compared by Cox regression models. Results confirm dismal prognosis for patients with refractory lymphoma, with high risk of death in ALCL and ENKTL in the last 5 years. We continue to enroll patients in our study and build better predictive models using state of the art synthetic intervention approaches to inform future clinical trials.

RESULTS

Table 1. Baseline demographic and clinical characteristics

<table>
<thead>
<tr>
<th>Country</th>
<th>No.</th>
<th>Gender</th>
<th>Age</th>
<th>IPI</th>
<th>Stage</th>
<th>Diagnosis Period (years)</th>
<th>Clinical Status</th>
<th>Commonly Used Therapy</th>
<th>Underwent Auto SCT</th>
<th>No. (%)</th>
<th>Received radiation, No. (%)</th>
<th>No. (%)</th>
<th>Remission, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>309</td>
<td>143</td>
<td>166</td>
<td>7</td>
<td>3</td>
<td>2001-2015</td>
<td>Complete</td>
<td>EPOCH-based</td>
<td></td>
<td>309/957 (33)</td>
<td>397/686 (58)</td>
<td>27/597 (5)</td>
<td>25/597 (42)</td>
</tr>
<tr>
<td>Brazil</td>
<td>408</td>
<td>278</td>
<td>130</td>
<td>8</td>
<td>3</td>
<td>2001-2015</td>
<td>Complete</td>
<td>EPOCH-based</td>
<td></td>
<td>408/1362 (30)</td>
<td>81/580 (14)</td>
<td>3/43 (7)</td>
<td>2/43 (5)</td>
</tr>
<tr>
<td>South Korea</td>
<td>128</td>
<td>75</td>
<td>53</td>
<td>3</td>
<td>3</td>
<td>2001-2015</td>
<td>Complete</td>
<td>EPOCH-based</td>
<td></td>
<td>128/397 (32)</td>
<td>26/309 (8)</td>
<td>75/686 (11)</td>
<td>27/686 (4)</td>
</tr>
<tr>
<td>Italy</td>
<td>101</td>
<td>99</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2001-2015</td>
<td>Complete</td>
<td>EPOCH-based</td>
<td></td>
<td>101/329 (31)</td>
<td>81/279 (29)</td>
<td>7/278 (3)</td>
<td>8/278 (3)</td>
</tr>
<tr>
<td>Japan</td>
<td>123</td>
<td>122</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2001-2015</td>
<td>Complete</td>
<td>EPOCH-based</td>
<td></td>
<td>123/365 (33)</td>
<td>104/123 (85)</td>
<td>24/123 (19)</td>
<td>20/123 (16)</td>
</tr>
</tbody>
</table>

CONCLUSIONS

This global study represents the first analysis of this type in RR PTCL contrasting SA to CC and demonstrates that both strategies are comparable. Results confirm dismal prognosis for patients with primary refractory disease in the last 5 years. We continue to enroll patients in our study and build better predictive models using state of the art synthetic intervention approaches to inform future clinical trials.

REFERENCES