Abstract: P6239
Late adverse effects of residual platinum concentrations on cardiac function in testicular cancer survivors: a 30-year follow-up study

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On behalf: Center for Cardiological Innovation

Topic(s):
Cardio-Oncology

Citation:
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Background: Cisplatin-based chemotherapy (CBCT) is essential in the treatment of testicular cancer (TC), and platinum can be detected in TC survivors decades after cessation of treatment. CBCT has been implicated as a risk factor in cardiovascular morbidity and mortality.

Purpose: Our study aimed to assess the relationship between residual serum platinum concentrations and changes in cardiac function and morphology in TC survivors 30 years after CBCT.

Methods: Seventy TC survivors diagnosed and treated with CBCT (1980–1994) were recruited from the longitudinal Norwegian Cancer Study in Testicular Cancer Survivors. Serum platinum concentration was measured twenty years after CBCT. Patients were then allocated to either a high or low platinum concentration group. Echocardiography was performed in all subjects.

Results: The participants were on average 60±9 years old. There was a trend towards smaller left ventricular (LV) volumes in the high residual platinum concentration group (Table). No intergroup difference in cardiac function was found. Six (9%) participants had reduced EF (<52%) and 14 (20%) participants had reduced LV global longitudinal strain (> −18.0%), however, there was no intergroup difference. Neither cumulative cisplatin dose nor residual serum platinum concentration showed any correlation with LV or right ventricular functional parameters.

Conclusion: Our 30-year follow-up study of testicular cancer patients could not demonstrate impact on cardiac function caused by cumulative cisplatin dose or residual serum platinum concentrations.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Low residual Pt concentration &gt;85 ng/L (n=35)</th>
<th>High residual Pt concentration &lt;85 ng/L (n=35)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative cisplatin dose, mg/m²</td>
<td>680±249</td>
<td>814±271</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Residual Pt concentration, ng/L</td>
<td>44±22</td>
<td>136±44</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>3D LV end-diastolic volume, ml/m²</td>
<td>66±17</td>
<td>60±8</td>
<td>0.07</td>
</tr>
<tr>
<td>3D LV end-systolic volume, ml/m²</td>
<td>29±15</td>
<td>24±5</td>
<td>0.08</td>
</tr>
<tr>
<td>3D ejection fraction, %</td>
<td>57±9</td>
<td>59±6</td>
<td>0.24</td>
</tr>
<tr>
<td>LV global longitudinal strain, %</td>
<td>−19.2±3.3</td>
<td>−20.0±2.0</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Data are presented as mean ± SD. The P-values were derived from the Student's t-test. LV, left ventricle; MV, mitral valve; Pt, platinum; RV, right ventricle; TAPSE, tricuspid annular plane systolic excursion.
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<table>
<thead>
<tr>
<th>LV global circumferential strain, %</th>
<th>−21.1±4.2</th>
<th>−22.1±1.8</th>
<th>0.30</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/e’</td>
<td>10.6±4.4</td>
<td>9.2±2.2</td>
<td>0.10</td>
</tr>
<tr>
<td>TAPSE, mm</td>
<td>2.2±0.4</td>
<td>2.3±0.4</td>
<td>0.22</td>
</tr>
<tr>
<td>RV fractional area change, %</td>
<td>40±7</td>
<td>41±7</td>
<td>0.67</td>
</tr>
</tbody>
</table>

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