Cardiovascular toxicity induced by chemotherapy, targeted agents and radiotherapy and its management, considering also cachexia

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Amgen, Bayer Schering, Biocon, Cephalon, Chugai, DRL, Eisai, Genomic Health, GSK, Helsinn, Hospira, Ipsen, JnJ OrthoBiotech, Kyowa Hakko Kirin, Merck, Merck Serono, Novartis, Ono Pharmaceuticals, Pfizer, Pierre Fabre, Roche, Sandoz, Sanofi, Tesaro, Taiho, Teva, Vifor

No responsibility accepted for involuntary errors or omissions.
The list may be incomplete, and does not reflect consultancy for NGOs, Universities, Governmental agencies, and others
Cardiovascular toxicity induced by chemotherapy, targeted agents and radiotherapy: ESMO Clinical Practice Guidelines†

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Anthracycline cardiotoxicity in the elderly cancer patient: a SIOG expert position paper

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Risk factors for radiation-associated heart damage include:

- dose $>30-35$ Gy
- dose per fraction $>2$ Gy
- large volume of irradiated heart
- younger age at exposure
- longer time since exposure
- use of cytotoxic chemotherapy
- endocrine therapy or trastuzumab
- presence of other risk factors such as diabetes, hypertension, dyslipidaemias, obesity, smoking etc.
**Table 1. Cardiac toxicity induced by trastuzumab**

<table>
<thead>
<tr>
<th>Trial</th>
<th>Design</th>
<th>Asymptomatic drop in LVEF (≥10 percentage-points to &lt;55%)</th>
<th>Severe CHF/cardiac events (NYHA class III/IV CHF or death)</th>
<th>Discontinued for cardiac reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSABP B31 [18]</td>
<td>AC + TH + H versus AC + T</td>
<td>34% versus 17%</td>
<td>4.1% versus 0.8%</td>
<td>19%&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>NCCTG N9831, n = 2766 [19]</td>
<td>AC + TH + H versus AC + T + H versus AC + T</td>
<td>5.8–10.4% versus 4.0–7.8% versus 4.0–5.1%</td>
<td>3.3% versus 2.8% versus 0.3%</td>
<td>n/a</td>
</tr>
<tr>
<td>BCIRG 006, n = 3,222 [14]</td>
<td>AC + T versus AC + TH + H versus TCaH&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11% versus 19% versus 9%</td>
<td>0.7% versus 2.0% versus 0.4%</td>
<td>n/a</td>
</tr>
<tr>
<td>HERA, n = 5,102 [20]</td>
<td>Adj chemo≥H versus Adj chemo alone</td>
<td>7.1% versus 2.2%</td>
<td>0.6% versus 0.06%</td>
<td>4.3%</td>
</tr>
<tr>
<td>FinHer, n = 232 [21]</td>
<td>V or T + H versus V or T&lt;sup&gt;d&lt;/sup&gt; ≥FEC×3</td>
<td>3.5% versus 8.6%</td>
<td>0% versus 3.4%</td>
<td>n/a</td>
</tr>
</tbody>
</table>

A, anthracycline; C, cyclophosphamide; T, taxane; H, trastuzumab; Ca, carboplatin; V, vinorelbine; F, 5-flourouracil; E, epirubicin; n/a, information not available.

<sup>a</sup>6.7% did not receive H after A due to unacceptable drops in LVEF.

<sup>b</sup>Included a nonanthracycline arm.

<sup>c</sup>96% of chemotherapy was A containing.

<sup>d</sup>No prior anthracycline before H exposure; H exposure limited to 9 weeks.
FROM ESMO GUIDELINES

Figure 1. Algorithm for the management of cardiotoxicity in patients receiving anthracyclines.
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