Photobiomodulation for the management of oral mucositis in cancer patients

Citation


Prevention of oral mucositis in hematopoietic stem cell transplantation

- **Guideline category: Recommendation (LoE I)**
- **Guideline statement:** The panel recommends the use of intra-oral PBM therapy using low-level laser therapy for the prevention of OM in adult patients receiving HSCT conditioned with high-dose CT, with or without total body irradiation using one of the selected protocols; following the specific PTPs of the selected protocol is recommended for optimal therapy.
Prevention of oral mucositis in head and neck cancer patients treated with radiotherapy

- **Guideline category:** Recommendation (LoE II)
- **Guideline statement:** The panel recommends the use of intra-oral PBM therapy using low-level laser therapy for prevention of OM in adult patients receiving RT to the H&N (without CT); the specific PTPs of the selected protocol should be followed for optimal therapy. Safety considerations unique to patients with oral cancer should be considered.

<table>
<thead>
<tr>
<th>Cancer treatment modality</th>
<th>Wavelength (nm)</th>
<th>Power density (irradiance; mW/cm²)</th>
<th>Time per spot (sec)</th>
<th>Energy density (fluence; J/cm²)</th>
<th>Spot size (cm²)</th>
<th>Number of sites</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSCT</td>
<td>632.8</td>
<td>31.25</td>
<td>40</td>
<td>1.0</td>
<td>0.8</td>
<td>18</td>
<td>From day after cessation of conditioning for 5 days</td>
</tr>
<tr>
<td></td>
<td>650</td>
<td>1000 *</td>
<td>2</td>
<td>2.0</td>
<td>0.04</td>
<td>54-70</td>
<td>From 1st day of conditioning till day + 2 post-HSCT(for 7-13 days)</td>
</tr>
</tbody>
</table>

Prevention of oral mucositis in head and neck cancer patients treated with radiotherapy and chemotherapy

- **Guideline category:** Recommendation (LoE I)
- **Guideline:** The panel recommends the use of intra-oral PBM therapy using low-level laser therapy for the prevention of OM in adult patients receiving RT and CT for H&N cancer; the specific PTPs of the selected protocol should be followed for optimal therapy. Safety considerations unique to patients with oral cancer should be considered.

<table>
<thead>
<tr>
<th>Cancer treatment modality</th>
<th>Wavelength (nm)</th>
<th>Power density (irradiance; mW/cm²)</th>
<th>Time per spot (sec)</th>
<th>Energy density (fluence; J/cm²)</th>
<th>Spot size (cm²)</th>
<th>Number of sites</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT</td>
<td>632.8</td>
<td>24</td>
<td>125</td>
<td>3.0</td>
<td>1</td>
<td>12</td>
<td>Entire RT course</td>
</tr>
</tbody>
</table>
Prevention of oral mucositis in cancer patients treated with chemotherapy

- Guideline: No guideline possible

Safety Analysis

In all analyzed RCTs, no short- or long-term adverse events with PBM treatments were reported, despite significant variations in the PTPs. However, in one cohort study, 15% of patients experienced an immediate (non-painful) burning sensation after intra-oral 635-nm diode laser treatment.

Abbreviations

CT — Chemotherapy
H&N — Head & neck
HSCT — Hematopoietic stem cell transplantation
LoE — Level of evidence
OM — Oral mucositis
PBM — Photobiomodulation
PTPs — PBM therapy parameters
RT — Radiotherapy
RT-CT — Radiochemotherapy