Diagnostik und Therapie früher und fortgeschrittener Mammakarzinome

Osteoonkologie und Knochengesundheit
Osteoonkologie und Knochengesundheit

- Versionen 2002–2020:
  Bischoff / Böhme / Brunner / Dall / Diel / Fehm /
  Fersis / Friedrich / Friedrichs / Hanf / Huober /
  Jackisch / Janni / Kolberg-Liedtke / Lux / Maas / Nitz / Oberhoff /
  Schaller / Scharl / Schütz / Seegenschmiedt / Solbach / Solomayer /
  Souchon

- Version 2021:
  Banys-Paluchowski / Kolberg-Liedtke
Meta-analyses and Reviews (metastatic breast cancer)


Results of Phase III trials (metastatic breast cancer)

3. Body JJ, Diel IJ, Lichinitser M et al. Oral ibandronate reduces the risk of skeletal complications in breast cancer patients with with
metastatic bone disease; results from two randomized, placebo-controlled phase III studies. Br J Cancer 90:1133-1137., 2004


6. Rosen LS, Gordon DH, Dugan W et al. Zoledronic acid is superior to pamidronate for the treatment of bone metastases in breast carcinoma patients with at least one osteolytic lesion. Cancer 100:36-43, 2004

Clinical relevance of bone resorption marker

Bisphosphonates for bone pain control
Denosumab - Therapy of bone metastases and skeletal related complications

Progression under bisphosphonates

**Clinical relevance of bone resorption marker**


**Bisphosphonates for bone pain control**

Randomized trials – Zoledronic acid:

Randomized trials – Other bone-targeted agents

Non-randomized studies:

Systematic reviews:
Reviews / Guidelines:


Zoledronic acid:

1. Himelstein AL, Foster JC, Khatcheressian JL et al. Effect of Longer-Interval vs Standard Dosing of Zoledronic Acid on Skeletal
Events in Patients With Bone Metastases: A Randomized Clinical Trial. JAMA 317(1):48-58, 2017

Pamidronate:

Denosumab & bisphosphonates:

Denosumab:

Sequential therapy with different BTAs:
Reviews / Overview

186Rhenium (\(^{186}\text{Re-HEDP}\))
**153Samarium (153Sm-EDTMP)**

**89Strontium (89Sr-Chlorid)**

**223Ra-dichloride:**

**177Lu (Lutetium)-EDTMP**

Recommendations and Clinical Practice Guidelines:


Reviews:

Operative therapy:

Radiation therapy: Randomized studies:
Radiation therapy: Non-randomized studies:


Steroids: Systematic review:

8. Guideline Program Oncology (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Supportive care of oncological patients –
8. Chow E, Meyer RM, Ding K et al. Dexamethasone in the prophylaxis of radiation-induced pain flare after palliative radiotherapy
Recurrent bone pain in pre-irradiated parts of the skeleton

Magnetic resonance-guided focused ultrasound
Cryoablation / Radiofrequency ablation
Bisphosphonates
Denosumab

Sequential therapy
### Bisphosphonates


#### Häufige Nebenwirkungen unter Behandlung mit Bisphosphonaten / Denosumab

<table>
<thead>
<tr>
<th>Drug</th>
<th>Acute-Phase Reaction</th>
<th>Nieren toxis</th>
<th>Obere GI-NW</th>
<th>Diarrhoe</th>
<th>ONJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clodronat 1500 i.v.</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clodronat 1600 p.o.</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Ibandronate 50 mg p.o.</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Ibandronate 6 mg i.v.</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zoledronate 4 mg i.v.(controllable)</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Pamidronate 90 mg i.v.</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zoledronate 4 mg i.v. q.6m</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Denosumab 120 mg sc q.4w</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>+</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note: Hypokalämie unter antiresorptiver Therapie bei ossären Metastasen!*

---

**Table:**

- **Drug**
- **Acute-Phase Reaction**
- **Nieren toxis**
- **Obere GI-NW**
- **Diarrhoe**
- **ONJ**

- **Clodronat 1500 i.v.**
  - Acute-Phase Reaction: 0
  - Nieren toxis: +
  - Obere GI-NW: 0
  - Diarrhoe: 0
  - ONJ: 0
  - Aminobiph.

- **Clodronat 1600 p.o.**
  - Acute-Phase Reaction: 0
  - Nieren toxis: 0
  - Obere GI-NW: +
  - Diarrhoe: +
  - ONJ: 0
  - Non-Aminobiph.

- **Ibandronate 50 mg p.o.**
  - Acute-Phase Reaction: 0
  - Nieren toxis: +
  - Obere GI-NW: 0
  - Diarrhoe: +
  - ONJ: 0
  - Aminobiph.

- **Ibandronate 6 mg i.v.**
  - Acute-Phase Reaction: +
  - Nieren toxis: 0
  - Obere GI-NW: 0
  - Diarrhoe: 0
  - ONJ: 0
  - Aminobiph.

- **Zoledronate 4 mg i.v. (controllable)**
  - Acute-Phase Reaction: +
  - Nieren toxis: +
  - Obere GI-NW: 0
  - Diarrhoe: +
  - ONJ: 0
  - Aminobiph.

- **Pamidronate 90 mg i.v.**
  - Acute-Phase Reaction: +
  - Nieren toxis: 0
  - Obere GI-NW: 0
  - Diarrhoe: 0
  - ONJ: 0
  - Aminobiph.

- **Zoledronate 4 mg i.v. q.6m**
  - Acute-Phase Reaction: +
  - Nieren toxis: +
  - Obere GI-NW: 0
  - Diarrhoe: 0
  - ONJ: 0
  - Aminobiph.

- **Denosumab 120 mg sc q.4w**
  - Acute-Phase Reaction: +
  - Nieren toxis: 0
  - Obere GI-NW: +
  - Diarrhoe: +
  - ONJ: 0
  - Aminobiph.
Denosumab


9. https://www.onkosupport.de/asors/content/e4126/e1743/e1861/e1862/e4628/LaufzettelAGSMOFarbefinal.pdf
Clodronate


**Adjuvant Aminobisphosphonates**


**Denosumab**


**Guidelines**

1. Dhesy-Thind S, Fletcher GG, Blanchette PS et al. Use of Adjuvant Bisphosphonates and Other Bone-Modifying Agents in Breast


**Raloxifen**

**Strontium ranelate**