Bone Health and Multiple Myeloma: What You Need to Know

Why and how does multiple myeloma affect bones?

- **Bone disease occurs in ~85% of patients**
  - Myeloma cells in the bone marrow cause increased bone breakdown and decrease the building of new bone.

In healthy individuals, old bone is replaced on an ongoing basis, a process known as remodeling.

In multiple myeloma, the remodeling process becomes unbalanced, and we begin to lose more bone than we replace.

- **Healthy**
  - Bone removal
  - Bone building

- **Multiple myeloma**
  - Bone removal
  - Bone building

What can myeloma bone disease lead to?

- **Bone loss**
  - Thinner and weaker bones
  - Formation of holes in the bones (causing fractures, spinal cord compression, and/or pain)
  - Bone loss increases calcium levels in the blood, which can lead to kidney stones, kidney failure, stomach upset, nausea, vomiting, constipation, confusion, lethargy and fatigue.

What tests are used to find and measure bone disease?

- **X-ray**
  - X-rays reveal osteoporosis, fractures, or holes in bone in 75% of patients.

- **MRI**

- **CT scan**

- **PET scan**
  - MRI and PET/CT appear to be more sensitive than x-rays in detecting smaller holes in bone.
  - MRI and PET/CT can reveal 85% more bone damage than x-rays.
What are the risk factors for osteonecrosis of the jaw (ONJ)?

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<tr>
<th>ONJ risk factors</th>
<th>How to minimize the risk of ONJ</th>
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<tr>
<td>• Extended use of bisphosphonates (&gt;12 months)</td>
<td>✓ Practice good oral hygiene and schedule regular dental visits</td>
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<tr>
<td>• Removal of teeth while on or after extended use of bisphosphonates</td>
<td>✓ Pause use of bone-strengthening medications before and after any dental extraction or invasive oral procedures</td>
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<td>• Treatment with denosumab</td>
<td>✓ Be attentive! ONJ seems to be related to the length of time patients are on treatment for bone disease</td>
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<td>• Age (higher risk in older patients)</td>
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<td>• A history of smoking, diabetes, or poor dental health</td>
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How can myeloma patients maintain their bone health?

**Vitamin D**
- Vit D3 (cholecalciferol)
  - 50,000 IU once a month
  - 1,000 IU once a day
- Vit D2 (ergocalciferol)
  - 100,000 IU once a month

**Calcium**
- 1,200 to 2,000 mg daily
- Patients with kidney impairment receiving calcium supplements need close monitoring to prevent vitamin D toxicity

The MMRF Patient Navigation Center is available to provide you with additional guidance and support and to answer your questions.

You can reach the MMRF Patient Navigation Center by phone at 1-888-841-MMRF (6673), Monday through Friday from 9:00 AM to 7:00 PM Eastern Time, or on the Web at themmrf.org/resources/patient-navigator-center