Management of the complications of myeloma and side-effects of treatment

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Common problems in myeloma

<table>
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<tr>
<th>Myeloma-related complications/symptoms</th>
<th>Treatment-related side-effects</th>
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<td>• Myeloma bone disease</td>
<td>• Peripheral neuropathy</td>
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<td>• Pain</td>
<td>• Gastro-intestinal problems</td>
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<td>• Kidney problems</td>
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<td>• Anaemia</td>
<td>• Fatigue</td>
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<tr>
<td>• Infections</td>
<td>• Blood clots</td>
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Myeloma bone disease

• 70 – 80% of patients have evidence of bone disease at diagnosis

Features:
• Bone pain
• Lytic lesions
• Osteopenia
• Osteoporosis
• Fractures
• High blood calcium
Common sites of myeloma bone disease

- Skull
- Spine
  - Thoracic
  - Lumbar
  - Vertebrae
- Pelvis
- Long bones of arms and legs

Normal bone remodelling

Bone breakdown = new bone formation

Bone cell activity in myeloma

Bone breakdown exceeds new bone formation
Effects of myeloma bone disease

<table>
<thead>
<tr>
<th>High calcium (Hypercalcaemia)</th>
<th>Bone pain</th>
<th>Weakened bones</th>
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<tbody>
<tr>
<td>• Kidney damage</td>
<td>• Back</td>
<td>• Lytic lesions</td>
</tr>
<tr>
<td>• Nausea</td>
<td>• Ribs</td>
<td>• Pathological fractures</td>
</tr>
<tr>
<td>• Tiredness</td>
<td>• Pelvis</td>
<td>• Loss of height</td>
</tr>
<tr>
<td>• Constipation</td>
<td>• Long bones of arms and legs</td>
<td>• Spinal cord compression</td>
</tr>
<tr>
<td>• Confusion</td>
<td>• Shoulder</td>
<td></td>
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Hypercalcemia

• Sign of increasing bone deterioration

• High levels of calcium in the blood can cause kidney damage and abnormal heart rhythms

• Prompt bisphosphonate required

• Other supportive treatments:
  - Adequate hydration
  - Furosemide
  - Steroids

Treating myeloma bone disease

- Non-medical treatments
- Surgery
- Radiotherapy
- Pain relief
Bisphosphonates – the ‘bone strengtheners’

• Anyone receiving myeloma treatment should receive a bisphosphonate whether or not they have myeloma bone disease

Monthly IV infusion
• Zometa (zoledronic acid)
• Aredia (pamidronate)

Daily tablets
• Bonefos
• Loron (Sodium clodronate)

Side-effects of bisphosphonates

• Flu-like symptoms, achy bones
• Nausea
• Gut disturbances
• Osteonecrosis of the jaw
  (maintain good mouth hygiene, regular dental check-up)
• Impaired kidney function
  (maintain high fluid intake)

Pain
Radiotherapy

**Treats:**
- Localised bone damage
- Rapid pain-relief
- Relieves pressure on spine

**Side-effects:**
- Nausea, vomiting
- Diarrhoea
- Skin reactions
- Fatigue

Surgical interventions

**Percutaneous Vertebroplasty**

Painful vertebral compression fracture  
Guided injection of bone cement  
Stabilised vertebral structure

Side-effects are rare

**Balloon Kyphoplasty**

Vertebral compression fracture  
Insertion and inflation of balloon  
Cavity filled with bone cement. Stabilises and restores height

Side-effects are rare
Kidney (renal) problems

Can affect up to 40% of patients. Causes of kidney problems include:

• light chain build-up in the kidney tubules causing blockages.

• Contributing factors – dehydration, high calcium, infections

• Side-effects of treatments – chemotherapy, bisphosphonates, NSAIDs (e.g. ibuprofen) antibiotics

Kidney problems

Symptoms

• Thirst
• Loss of appetite
• Nausea
• Reduced urine output
• Swollen ankles
• Breathing problems
• Blood or protein in urine

Greatest impact of kidney problems is on the choice and dose of myeloma treatments.

Kidney problems - management

Can be reversible if managed and controlled early:

• Treating the myeloma
• High-dose steroids
• Reducing calcium levels
• Keeping well hydrated
• Careful use of drugs
• Dialysis may be needed for some patients
Low blood counts

Bone marrow

- Red blood cells → Anaemia
- White blood cells → Leukopenia/neutropenia
- Platelets → Thrombocytopenia

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Anaemia (low red blood cells)

Two out of three patients will have anaemia at some point

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<tr>
<th>Causes</th>
<th>Symptoms</th>
<th>Treatment</th>
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<tbody>
<tr>
<td>Myeloma, Side-effect of treatment, Kidney damage ↓ EPO</td>
<td>Fatigue, Pale appearance, Shortness of breath, Dizziness, Chest pains with activity</td>
<td>Treating the myeloma, Blood transfusions, EPO injections, Dose reduction if side-effect</td>
</tr>
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Neutropenia (low white blood cells)

Lowered immune system – greater risk of bacterial, viral and fungal infections

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<td>Myeloma, Side-effect of treatment</td>
<td>Feeling unwell, Raised temp, Shivers, Sore throat, cough, Diarrhoea, Pain, Localised swelling</td>
<td>Treating the myeloma, Antibiotic, anti-viral anti-fungal treatment (incl. prophylaxis), Dose-reduction if side-effect, G-CSF injections, Vaccinations</td>
</tr>
</tbody>
</table>
**Thrombocytopenia**
- low platelet count

**Causes**
- Myeloma
- Side-effect of treatment

**Symptoms**
- Increased bruising
- Increased bleeding
- Purpura

**Treatment**
- Treating the myeloma
- Dose reduction if side-effect
- Platelet transfusion

**Peripheral neuropathy**

**Damage to the nerves, especially hands, feet, arms, legs**

**Causes:**
- Side-effect of treatment (Thalidomide, Velcade, Revlimid)
- Myeloma protein depositing on and damaging the nerves

**Symptoms:**
- Tingling, ‘pins and needles’, burning
- Altered sensitivity, numbness
- Pain

**Peripheral neuropathy - treatment and management**

- Neuropathic pain-relief (e.g. gabapentin, pregabalin)
- Dose reduction, frequency or route of administration of treatment
- Report any symptoms as soon as possible
- Vitamin B and folic acid supplement
- Gentle massage, heat/cold packs
Gastro-intestinal disturbances

**Cause:**
- Side-effect of treatments

**Symptoms:**
- Diarrhoea
- Constipation
- Nausea
- Vomiting

**Treatment:**
- Anti-diarrhoeal drugs
- Laxatives
- Anti-emetics

Thrombosis

- Increased risk of blood clots (deep vein thrombosis, pulmonary embolism)
- Causes — Myeloma - or treatment-related (Thalidomide, Revlimid)
- Anti-coagulant prophylaxis (Clexane, warfarin, aspirin)

Reducing complications and side-effects

- Early diagnosis is key
- Report symptoms promptly
- Take preventative measures wherever possible
- Comply with the prescribed treatment
- Talk to your doctor or nurse
The future

• New treatments being developed
  – more targeted, fewer side-effects

• Different ways of administering treatment
  e.g. smaller doses, different route of delivery

• Better supportive/preventive treatment and care

For information:

www.myeloma.org.uk
0800 980 3332