Musculoskeletal pain management

Pain control is one of the greatest challenges in managing osteoarthritis and osteoporosis, write Drs Ola Suleiman and David Kane

OSTEOARTHRITIS and osteoporosis are two of the most common musculoskeletal diseases. Osteoarthritis is by far the most frequent form of arthritis and typically presents with symptoms of pain with subsequent impaired quality of life and locomotor function. It is estimated that half a million people in Ireland suffer from arthritis.

In contrast, osteoporosis is often referred to as a silent disease, usually remaining asymptomatic until complications such as fracture occur. It is estimated that the lifetime risk of osteoporotic fracture is at least one in three for women. The most common osteoporotic fracture is vertebral, which is usually managed non-surgically.

Pain management of both of these conditions presents a particular challenge due to their chronic nature and also because the disease population tends to be more elderly with associated comorbidities and associated polypharmacy.

Osteoarthritis

Osteoarthritis is a degenerative condition affecting predominantly the weight-bearing joints and spine of which various subclasses exist. Optimal treatment is aimed at relieving symptoms of pain and stiffness by means of patient education, non-pharmacological techniques, pharmacological therapy and surgery. Surgery is usually a final treatment modality for those patients with intractable pain or severe limitation of movement.

Non-pharmacological management of osteoarthritis

Non-pharmacological measures are gaining increasing recognition in the management of osteoarthritis with good evidence of efficacy, safety and cost-effectiveness. Helping patients understand the nature of their disease can alleviate fear and stress, which influence how a patient manages with their condition. Excellent patient information is available from Arthritis Ireland, both as leaflets and on its website www.arthritis-foundation.com.

Pharmacological management of osteoarthritis

The pain management schedule produced by the WHO is a useful guide to managing pain in osteoarthritis and osteoporosis with progression depending on poor response to preceding medication, although the clinician should prescribe commensurate to their evaluation of the patient’s pain severity.

Paracetamol: This should be first choice therapy. It is particularly useful in the older person with other comorbidities; combination therapy with other analgesics in uncontrolled pain is often the norm.

Non-steroidal anti-inflammatories: NSAIDs are very efficacious in osteoarthritis but their benefits must be balanced in each patient against the potential risks of peptic ulcer (PUD), cardiac and renal disease. This is difficult when treating older patients with osteoarthritis who are at increased risk of these conditions. Low doses are less efficacious but better tolerated than high doses, and sustained release preparations give better duration of pain control.

Co-administration of a proton pump inhibitor is advised if continuous full dose NSAID is used long-term or in patients with risk factors for PUD. COX-2 inhibitors also reduce the risk of PUD but should be

WHO pain ladder for pain management

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<td>Weak opioid, ie. codeine</td>
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<td><strong>Paracetamol</strong></td>
<td>First-line therapy for pain relief in OA</td>
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<tr>
<td><strong>NSAID</strong></td>
<td>Balance benefits against risk of PUD, renal and cardiac disease. Coprescribe with a PPI if long-term use</td>
</tr>
<tr>
<td><strong>Glucosamine</strong></td>
<td>Doses of 1,500mg daily for knee OA. Side-effects are negligible</td>
</tr>
<tr>
<td><strong>Topical NSAID/Capsaicin</strong></td>
<td>Useful with associated soft tissue pain</td>
</tr>
<tr>
<td><strong>Intra-articular corticosteroid</strong></td>
<td>Effective, though often necessary to repeat</td>
</tr>
<tr>
<td><strong>Intra-articular hyaluronate</strong></td>
<td>Single-dose preparations now available</td>
</tr>
<tr>
<td><strong>Opiates</strong></td>
<td>Use for severe pain and functional deficit</td>
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There are two types of narcotics:
- **Opiates**, which are derived from natural opium (eg. morphine sulphate 10mg and codeine, as in paracetamol/codeine combinations, eg. Tylex two tablets three times daily)
- **Opioids**, which are synthetic drugs, which include oxycodone 10mg twice daily

**Delivery ranges from oral (morphine) to transdermal (fentanyl 25µg/hr, buprenorphine 5µg/hr-70µg/hr).**

Narcotic analgesia is used in cases that fail to respond to the above treatment modalities in accordance with the WHO pain ladder. Initially, a combination of codeine/paracetamol is used. Transdermal delivery systems are effective and highly patient-acceptable.

**Evidence conditions**
Conditions such as depression and poor sleep should be identified and treated.

**Osteoporosis**
While osteoporotic fractures of hip and wrist are managed by orthopaedic surgeons, osteoporotic vertebral fracture is the most common osteoporotic fracture and is usually managed non-surgically.

All patients with a low trauma fracture require screening for osteoporosis and appropriate therapy with calcium, vitamin D and antiresorptive or anabolic bone agents. Currently the diagnosis of osteoporosis is based on bone densitometry (DXA).

In the near future, a 10-year osteoporotic fracture risk will be calculated on the basis of clinical risk factors (age, a prior fragility fracture, a parental history of hip fracture, smoking and use of systemic corticosteroids, excess alcohol intake and rheumatoid arthritis) in combination with DXA, and this will be used to decide upon therapy.

Management of an acutely symptomatic vertebral compression fracture in the absence of instability or neurologic compromise initially focuses on pain relief with limited bed rest, appropriate analgesics and occasional local measures.

It is important to rule out malignancy and infection as a cause of acute vertebral collapse. Clinical assessment, plain radiography, ESR and serum/urine protein electrophoresis is usually sufficient but if in doubt, magnetic resonance imaging (MRI) of the spine should be performed.

**Exercise and physical therapy**
Physical therapy (PT) may be incorporated into the treatment plan. PT can help the patient build strength, flexibility, and increase range of motion. Exercise promotes circulation that stimulates bones to heal and strength builds balance, which will help to prevent falling. During PT the patient is taught ‘safe’ movements to help prevent injury. Hydrotherapy produces good pain relief.

**Analgesic medication**
This has been discussed above and management is in accordance with the WHO pain ladder. However, the pain of vertebral fracture may be severe, requiring commencement with paracetamol plus NSAID plus opioid.

Calcitonin, pamidronate and vertebroplasty are considered for patients whose pain is not controlled by analgesic medication.

**Calcitonin**: This is not a first line treatment option, but nasally administered calcitonin may hasten relief of pain and has beneficial effects on bone mass.

**Pamidronate**: Some studies have demonstrated a reduction in the level of pain experienced by patients with osteoporotic fractures who receive intravenous pamidronate, though by an unclear mechanism.

**Vertebroplasty and kyphoplasty**: Vertebroplasty is a highly specialised and invasive procedure where the affected vertebrae are injected with special orthopaedic cement under radiographic guidance that stabilises the vertebrae and may relieve pain. Kyphoplasty, a newer technique, involves pneumatic restoration of the collapsed vertebral body prior to introduction of cement, thus reducing vertebral compression and kyphosis.

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