



Understanding osteoporotic pain and its pharmacological treatment: supplementary presentation

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Abstract

Osteoporosis, a disorder that affects millions of people worldwide, is characterized by decreased bone mass and microstructural alterations giving rise to an increased risk of fractures. Osteoporotic fractures can cause acute and chronic nociceptive and neuropathic pain that mainly affects elderly patients with multiple comorbidities and commonly on different drug regimens. Central sensitization seems to play a pivotal role in developing and maintaining chronicity of post-fracture pain in osteoporosis. Antiosteoporosis drugs are able to partially control pain, but additional analgesics are always necessary for pain due to bone fractures. Nonsteroidal anti-inflammatory drugs (NSAIDs) and selective COX-2 inhibitors reduce acute pain but with a poor effect on the chronic neuropathic component of pain and with relevant side effects. Opioid drugs can control the whole spectrum of acute and chronic bone pain, but they differ with respect to their efficacy on neuropathic components, their tolerability and safety. Chronic pain after osteoporotic fractures requires a multifaceted approach, which includes a large spectrum of drugs (antiosteoporosis treatment, acetaminophen, NSAIDs, selective COX-2 inhibitors, weak and strong opioids) and non-pharmacological treatment. Based on a better understanding of the pathogenesis of osteoporotic and post-fracture pain, a guided stepwise approach to post-fracture osteoporotic pain will also better meet the needs of these patients.

Keywords Analgesic treatment · Chronic pain · Opioids · Osteoporotic fracture pain · Osteoporotic pain mechanism · Osteoporotic pain treatment

Key scientific question

- Osteoporosis, a disorder that affects millions of people worldwide, is characterized by decreased bone mass and microstructural alterations giving rise to an increased risk of fractures.
- Osteoporotic fractures can cause acute and chronic pain that mainly affects elderly patients with multiple

comorbidities and commonly on different drug regimens.

- The aim of this paper is to summarize the pathogenesis and systemic treatment of osteoporotic pain.

Key findings

- Osteoporotic fractures induce both acute and chronic nociceptive and neuropathic pain.
- Central sensitization seems to play a pivotal role in developing and maintaining chronicity of post-fracture pain in osteoporosis.
- Antiosteoporosis drugs are able to partially control pain, but additional analgesics are always necessary for pain due to bone fractures.
- Nonsteroidal anti-inflammatory drugs (NSAIDs) and selective COX-2 inhibitors reduce acute pain but with a poor

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effect on the chronic neuropathic component of pain and with relevant side effects.

- Opioid drugs can control the whole spectrum of acute and chronic bone pain, but they differ with respect to their efficacy on neuropathic components, their tolerability and safety.

Significance of findings

- Chronic pain after osteoporotic fractures requires a multifaceted approach, which includes a large spectrum of drugs (antiosteoporosis treatment, acetaminophen, NSAIDs, selective COX-2 inhibitors, weak and strong opioids) and non-pharmacological treatment.
- Based on a better understanding of the pathogenesis of osteoporotic and post-fracture pain, a guided stepwise approach to post-fracture osteoporotic pain will also better meet the needs of these patients.

Why is the study important and what are the clinical implications of the findings?

- Bone loss is asymptomatic and progresses without pain and other symptoms until the occurrence of a fracture. This event is particularly painful and not sufficiently considered by clinicians.
- This paper focuses on the pain that characterizes the acute fracture event.
- This is the first review of such type in the field of osteoporosis, opening a window to an increased attention of the bone doctor towards the pain syndrome.

Compliance with ethical standards

Conflicts of interest None.

Further reading

1. Vellucci R, Terenzi R, Kanis JA, Kress HG, Mediati RD, Reginster J-Y, Rizzoli R, Brandi ML (2018) Understanding osteoporotic pain and its pharmacological treatment. *Osteoporosis International*. <https://doi.org/10.1007/s00198-018-4476-y>