Opioid-induced hyperalgesia (OIH) is a key factor in the clinical management of patients experiencing pain. However, limited knowledge exists regarding the specific mechanisms involved in OIH and its treatment. A thorough assessment is usually required, and clinical diagnosis is mainly determined by exclusion in medical practice. Patients who are taking opioids should receive ongoing, comprehensive assessment by a clinician. Early identification of OIH will lead to improved patient outcomes.

AT A GLANCE

- Understanding OIH is essential to the clinical management of patients with cancer experiencing pain.
- Although a comprehensive assessment of pain is usually required, diagnosis of OIH primarily occurs through exclusion, with opioid rotation being the fundamental method of treatment.
- The early recognition and diagnosis of OIH is essential for treatment effectiveness and better patient results.

KEYWORDS
pain; opioid; analgesia; opioid-induced hyperalgesia; cancer

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Opioid-Induced Hyperalgesia

Clinical implications for advanced practice nurses in oncology

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Because of progressively worsening tumor-related pain, a 48-year-old woman with metastatic spindle cell sarcoma was referred to palliative care services. She was prescribed methadone (Dolophine®) twice daily and hydromorphone (Dilaudid®) as needed for breakthrough pain, but required frequent dose escalations. Gabapentin (Neurontin®), celecoxib (Celebrex®), and dexamethasone (Decadron®) were added, providing temporary relief. Following cancer surgery, the previous pain regimen with hydromorphone administered via epidural delivery system failed to control her pain. She was diagnosed with opioid-induced hyperalgesia (OIH) and transferred to the intensive care unit for a ketamine (Ketalar®) infusion.

Opioid-Induced Hyperalgesia

In the clinical management of cancer-related pain, opioids are the most frequently prescribed type of analgesia. Unfortunately, long-term use of opioids, gradual increase of dosages, or rapid dose titrations may lead to a phenomenon called OIH (Tompkins & Campbell, 2011). OIH is a state of nociceptive sensitization caused by exposure to large doses of opioids during a prolonged period of time, or by rapid dose titrations in patients who have been on them for a short period of time (Leal, Clivatti, Garcia, & Sakata, 2010; Raffa & Pergolizzi, 2012; Ramasubbu & Gupta, 2011). OIH is a paradoxical response to opioid agonists, resulting in an increased perception of pain rather than analgesia. Possible mechanisms behind OIH include activation of N-methyl-D-aspartate (NMDA) receptors; activation of prostaglandins, cytokines, and chemokines; changes in descending facilitation and intensifications in dynorphin levels; increases in antiopioid peptides; and activation of the mechanistic target of rapamycin (Leal et al., 2010; Lutz, Nia, Xiong, Tao, & Bekker, 2015; Pasero & McCaffery, 2012; Raffa & Pergolizzi, 2012). Although the mechanisms behind OIH are not completely understood, OIH may be part of an adaptive response, and which patients are at higher risk remains unclear (Treister, Eisenberg, Lawental, & Pud, 2012).

Assessment

Hyperalgesia plays an important role in the clinical management of patients with pain. Because limited knowledge exists regarding the specific mechanisms involved, OIH is mainly a diagnosis of exclusion in clinical practice, and assessment is essential for an accurate diagnosis. The first step is a thorough pain assessment. Advanced practice nurses (APNs) must determine whether (a) the patient has increased sensitivity to pain and (b) the nature of the pain extends beyond the preexisting anatomic area. In OIH, increased pain coincides with escalation in opioid titrations or opioid administration. Therefore, a thorough and accurate assessment by the clinician will improve patient outcomes