

Perioperative Management of the Opioid Tolerant Patient for Orthopedic Surgery



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KEYWORDS

• Opioid tolerance • Cellular mechanisms • Postoperative pain • Opioids • Ketamine

KEY POINTS

- Opioid tolerance may occur as early as 2 weeks after therapy is started with opioids.
- Patients who have received high doses of opioids preoperatively will respond better to therapy with opioids with high intrinsic efficacy, such as sufentanil.
- Evidence supporting the role of the N-methyl D-aspartate (NMDA) receptor in the development of tolerance suggests the use of NMDA receptor antagonists, such as ketamine, for the management of patients who are not responding to increasing doses of opioids.
- Epidural techniques with a local anesthetic and higher doses of morphine or sufentanil are effective in the management of postoperative pain in patients with opioid tolerance.

INTRODUCTION

Determining the number of patients with pain in the United States has been a difficult task, because calculations of the prevalence of pain vary depending on definitions of the levels of pain and methods used to quantify it. Recently, however, the Institute of Medicine (IOM) estimated that in 2011 there were 100 million individuals with pain in the United States.¹ This calculation was made based on a study that used a World Health Organization (WHO) World Mental Health Survey instrument in 10 developed countries and concluded that approximately 37% of adults have common chronic pain conditions.¹ It is noteworthy that these estimates do not include either patients with acute pain or children with pain. This increase in the prevalence of pain was paralleled by an increase in the use of prescription analgesics, including opioids. The National Health and Nutrition Examination Survey (NHANES) showed an increase in

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the number of Americans using opioids from the 1988 to 1994 period (3.2%) to the 2005 to 2008 period (5.7%).¹ Of these individuals, 7% were patients aged 65 years or older. Moreover, according to the White House Action Plan, the number of opioid prescriptions dispensed by retail pharmacies increased by 48%, representing 257 million prescriptions between 2000 and 2009.² Of the 3.61 billion total prescriptions filled in the United States in 2009, 7% were for opioids.³ Clearly, opioid analgesic use among Americans, particularly individuals aged 65 years and older, has increased in the past 12 years. This increase in opioid use can be explained in part by the progressively increasing number of patients experiencing pain due to osteoarthritis, as members of the “baby boomer” generation have reached the age at which they begin to feel the effect of such conditions.⁴

A more cautious and thoughtful approach to opioid prescribing is further emphasized by the statistic that an estimated 35 million Americans have misused prescription opioids during their lifetimes, which translates to about 13.9% of the US population.⁵ In 2011, 6.1 million Americans reported that they misused prescription opioids within the past month. Annual increases in prescription opioid misuse have been reported in all age groups, and an estimated 1.8 million people fit the criteria for substance abuse or dependence.⁵ Moreover, recent pain therapy recommendations for geriatric patients suggest that the use of nonsteroidal anti-inflammatory drugs (NSAIDs) and cyclooxygenase-2 (COX-2) inhibitors may be associated with an increase in morbidity and mortality from cardiac and gastric causes, resulting in an increased reliance on opioid analgesics for pain treatment in these patients.⁶

To add an additional layer of concern, some data suggest that opioid therapy may not result in analgesic benefit and improved function in all patients suffering from osteoarthritis.⁷ This recent systematic review of the use of traditional opioids in pain due to osteoarthritis concluded that this class of analgesics should not be used routinely for osteoarthritis.⁷ This information suggests that practitioners should be very cautious when prescribing opioid analgesics and that patients receiving this class of analgesics should be continuously evaluated for therapeutic success as judged by pain and functionality improvement, side effects, adverse events, and aberrant behavior.⁸ Treatment plans that include opioids should include an exit strategy concept,⁹ whereby patients who do not show improvement in pain intensity and function after a reasonable opioid trial are quickly identified and titrated off opioid analgesics. This approach is not uniformly implemented by clinicians, and many patients who fail to respond to reasonable doses of opioids are placed on ever higher doses, increasing the risk of tolerance, opioid-induced hyperalgesia, and aberrant behaviors (misuse, abuse, and diversion).

Opioid-tolerant patients may present a significant problem for the management of postoperative pain, because patients who have received or self-administered opioids for as little as 2 weeks prior to surgery may exhibit signs of opioid tolerance, resulting in a higher perioperative opioid requirement.¹⁰ This increased need for opioid medications may result in undertreatment, which can be misinterpreted as opioid craving or aberrant behavior. Moreover, the risk for physiologic withdrawal may also be present if their daily opioid consumption is abruptly decreased either because they failed to report their actual usage pattern or due to reluctance of health providers to match their preoperative dosing. This is particularly important in those patients who abuse opioids, because their daily opioid intake may be significantly greater than those patients taking them for therapeutic purposes. Moreover, the former patient population may also take other illicit drugs that may have effects on the N-methyl-D-aspartate receptor (NMDA) (eg, phencyclidine [PCP]) or combinations of this agent with other illicit drugs such as marijuana.¹¹

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