Original Article

Current Ketamine Practice: Results of the 2016 American Society of Pain Management Nursing Survey on Ketamine

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Abstract:

Background: Ketamine is increasingly utilized for a variety of pain management challenges. Audience comments from a ketamine presentation at the 2015 American Society of Pain Management Nursing (ASPMN) Conference reflected wide variation in ketamine practices as well as barriers to use. Aim: The goal was to gain a greater understanding of ASPMN member practice patterns and barriers related to ketamine as adjunctive therapy for pain management. Design: A questionnaire survey design was used. Settings: Respondents represented 35 states and 2 countries. Participants: The participants were 146 respondents from ASPMN membership (1,485 members). Methods: The survey was distributed by ASPMN on SurveyMonkey. Practice setting and ketamine administration practices were assessed with areas for comments. Results were reviewed using frequencies to describe responses and formatted into tables. Comments were individually reviewed and grouped into common themes. Results: Administration of ketamine as an analgesic was reported by 63% of respondents. Continuous intravenous ketamine infusions were the most common route of administration (65%); however, wide variability in dosing and length of therapy was reported. A wide variety of practices and challenges related to ketamine utilization were noted. Conclusions: Numerous studies have indicated the analgesic benefits of ketamine in pain management. The lack of practice standardization has created challenges to its consistent use and outcome measurement. Additionally, the off-label use of ketamine for pain management creates its own unique challenges. However, given the current national climate with intense focus on pain management, interdisciplinary practitioners have an ideal opportunity to evaluate ketamine's use in a comprehensive approach to pain management.

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As the United States grapples with the ramifications of chronic opioid use, the need for non-opioid modalities to manage pain becomes more urgent. More than 100 million Americans have chronic pain (Institute of Medicine [IOM], 2013), raising the likelihood that patients with chronic pain conditions and opioid tolerance will be seen by providers in all health care settings. Traditional management of chronic pain with antidepressants, anticonvulsants, and opioids has limited efficacy, with only 30% to 40% of patients reporting improved pain management with these modalities (Niesters, Martini, & Dahan, 2013). In the 2016 Guidelines for Prescribing Opioids, the Centers for Disease Control and Prevention (CDC) recommends use of non-pharmacologic and non-opioid therapies for chronic pain, and when used, these should be used in combination with an opioid (CDC, 2016). It is increasingly clear that utilization of innovative therapies is required to provide comprehensive pain management for our patients (IOM, 2013).

The anesthetic properties of ketamine have been extensively studied over the last three to four decades. There is a growing body of research on ketamine for other indications including analgesia, antidepressant, anti-inflammatory, neuroprotective, and antitumor effects (Niesters et al., 2013). Studies of low-dose ketamine report analgesic effects caused by pain impulse inhibition at the *N*-methyl-D-aspartate (NMDA) receptor (Himmelseher & Durieux, 2005), as well as activation of descending modulation pathways (Niesters et al., 2013). Many studies indicate the efficacy of ketamine for chronic pain and acute on chronic pain including reduction in postoperative opioid administration. However, details for non-operative administrative dosing are lacking.

Despite 50 years of research and clinical use, there exists a lack of information on nursing care of the patient receiving ketamine; of additional concern is the lack of dosing guidelines. At the 2015 American Society of Pain Management Nursing (ASPMN) conference, participant comments during a presentation on ketamine as an adjuvant for pain suggested that although ketamine is used extensively, practice varies relative to dosing, patient selection, indications for use, and clinical practice area. The purpose of this article is to review the 2016 ASPMN membership survey results on ketamine practice patterns and barriers related to ketamine as adjunctive therapy for pain management and provide recommendations for steps to remove barriers to use.

LITERATURE REVIEW

Mechanism of Action

Ketamine provides analgesia by blocking the NMDA receptors (Persson, 2013), and new evidence indicates ketamine influences descending inhibitory pain pathways (Niesters et al., 2013). Side effects from the clinical use of ketamine may affect the cardiovascular, neurologic, and central nervous systems. The central nervous system side effects could include hallucinations, anxiety, and vivid dreams. These psychedelic effects explain why ketamine has become a drug of abuse (Niesters et al., 2013).

Ketamine was developed in the 1960s by a Parke-Davis scientist searching for an ideal anesthetic for veterinary medicine that would be a safer alternative to phencyclidine (PCP) (Mion & Villevieille, 2013). The first systematic reviews exploring the analgesic properties of low-dose ketamine occurred in the 1970s (Persson, 2013). Discovery of the NMDA receptor in 1987, and its role in pain processing, generated renewed interest in ketamine as a potential anti-hyperalgesic agent (O'Brien, Pangarkar, & Prager, 2014). The hallucinatory side effects made it a popular recreational drug, prompting ketamine to be classified as a Schedule III Controlled Substance in 1999 (Dong, Mellin-Olsen, & Gelb, 2015). In 2003, Hocking and Cousins published the first systematic review on the effectiveness of ketamine in chronic pain management, which included 11 controlled trials, 2 uncontrolled trials, 9 case reports, and 2 case series from 1966 to 2002 (O'Brien et al., 2014).

Because of its analgesic effects, ketamine is increasingly utilized for a variety of pain management challenges including neuropathic pain, acute on chronic pain, and persistent postsurgical pain.

The U.S. Food and Drug Administration (FDA) classifies ketamine as a general anesthetic providing dissociative anesthesia with a wide margin of safety. Therefore, the use of ketamine as an analgesic is considered an off-label use in the United States (FDA, 2015) and by many commercial insurers. This off-label designation has far-reaching implications and affects many areas of health care, including nursing practice, practice setting utilization, and reimbursement. Interestingly, ketamine is listed as an option for the management of acute pain in remote areas (Russell et al., 2014), as well as for analgesia in combat areas (Butler et al., 2014). Ketamine is noted to be essential in low- and middle-income countries as an anesthetic because of its ease of administration (Dong et al., 2015).