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BRIEF REPORT

A Survey of Wilderness Medicine Analgesia Practice Patterns

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Introduction—In 2014, the Wilderness Medical Society (WMS) published guidelines for the treatment of acute pain in remote settings. We surveyed wilderness medicine providers on self-reported analgesia prescribing practices.

Methods—We conducted a prospective, anonymous survey. Respondents were recruited from the WMS annual symposium in 2016. All willing attendees were included.

Results—During the symposium, we collected a total of 124 surveys (68% response rate). Respondent age was 42±12 (24–79) years (mean±SD with range), 58% were male, and 69% reported physician-level training. All respondents had medical training of varying levels. Of the physicians reporting a specialty, emergency medicine (59%, 51), family medicine (13%, 11), and internal medicine (8%, 7) were reported most frequently. Eighty-one (65%) respondents indicated they prefer a standardized pain assessment tool, with the 10-point numerical rating scale being the most common (54%, 67). Most participants reported preferring oral acetaminophen (81%, n=101) or nonsteroidal anti-inflammatory drugs (NSAID) (91%, n=113). Of those preferring NSAID, most reported administering acetaminophen as an adjunct (82%, n=101). Ibuprofen was the most frequently cited NSAID (71%, n=88). Of respondents who preferred opioids, the most frequently preferred opioid was oxycodone (26%, n=32); a lower proportion of respondents reported preferring oral transmucosal fentanyl citrate (9%, n=11). Twenty-five (20%, n=25) respondents preferred ketamine.

Conclusions—Wilderness medicine practitioners prefer analgesic agents recommended by the WMS for the treatment of acute pain. Respondents most frequently preferred acetaminophen and NSAIDs.

Keywords: austere, pain

Introduction

BACKGROUND

Pain is the most common complaint encountered in wilderness settings.[1–5] In 2014, the Wilderness Medical Society (WMS) published clinical practice guidelines for the treatment of acute pain in response to recurring reports of inadequate pain management in the prehospital setting.[6] Previous reports attribute insufficient analgesia administration in the austere environment to transportation restrictions, medication storage requirements, vascular access challenges, patient monitoring limitations, limitations due to cold-weather clothing, provider comfort with specific medications, and lack of evidence specific to this setting.[6–10] Research has found that uncontrolled pain is associated with significant stress responses, deleterious health effects, and psychologic disorders.[6,11,12]

The WMS recommends a tiered approach to pain management.[6] Initial interventions include comfort care, cryotherapy, compressive bandages, and splints. First-line medication should be the combination of acetaminophen and a nonsteroidal anti-inflammatory drug (NSAID). Providers may advance to oral formulations of opioids—oxycodone, hydrocodone, or

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oral transmucosal fentanyl citrate—if moderate or severe pain persists. If these medications are insufficient or the patient is in moderate-to-severe pain, the WMS endorses intranasal (IN) or intramuscular (IM) administration of opiates, with IN preferred over IM because of the slower and variable absorption rates with IM administration. Finally, intravenous (IV)- or intraosseous-administered opiates, such as morphine and fentanyl, should be considered for moderate-to-severe pain when vascular access can be obtained and the need for repeated dosing is likely. The WMS considers ketamine an advance-tier analgesic agent that is particularly useful for painful, short-duration procedures. Local and regional anesthesia is recommended if the provider is properly trained.

Our survey of pain management practices was designed to assess the current provider preferences for analgesia management practices in the wilderness setting. We describe the practice patterns as reported by providers in this survey study.

Methods

STUDY DESIGN

We conducted an anonymous, voluntary survey assessing the pain practices of wilderness medicine medical personnel. The protocol was submitted to the Colorado Multiple Institutional Review Board. This study was determined to be exempt from Institutional Review Board oversight (COMIRB protocol 16-1259). Surveys were offered to all wilderness medical providers attending the Wilderness Medical Society annual summer symposium in 2016. Incomplete surveys were included if the demographic information was complete to accurately stratify participants into groups. We designed a survey targeted at collecting provider demographics, pain assessment methods, and reported preference of various analgesic agents in the austere, wilderness setting (see Appendix).

ANALYSIS

We performed all statistical analysis using Microsoft Excel (version 10, Redmond, WA) and JMP Statistical Discovery from SAS (version 13, Cary, NC). Ordinal variables are reported as medians and interquartile ranges. Continuous variables are reported as means and standard deviations. We set significance at $P \leq 0.05$.

Results

During the symposium, we collected 124 completed surveys of the 182 distributed, for a 68% return rate. There were 421 conference attendees in total. The average age of respondents was 42 years (±12, range 24–79), 58% were male, and 69% reported physician-level training (Table 1). Of the physicians reporting a specialty, 59% were emergency medicine (n=51), 13% family medicine (n=11), and 8% internal medicine (n=7). Of the physician assistants, most were trained in emergency medicine (18%, n=2) or orthopedics (18%, n=2). Of the nurse practitioners, 1 was emergency medicine and 1 was family medicine based.

The majority (65%, n=81) of respondents indicated they prefer a standardized pain assessment tool, with the 10-point numerical rating scale (NRS) being the most common (54%, n=67). Most participants preferred oral NSAIDs and acetaminophen; parenteral agents were infrequently preferred (Table 2). The most frequently reported NSAID noted was ibuprofen (71%, n=88). Most reported using acetaminophen either alone or as an adjunct (82%, n=101). Of respondents using opiates, the most frequently noted opioid was oxycodone (26%, n=32); a lower proportion of respondents reported preference of oral transmucosal fentanyl citrate (9%, n=11). When specifically asked about ketamine, most reported no preference for this agent (80%, n=99). Of those who prefer ketamine, the most frequently reported route was IV (76%, n=19) and IM (44%, n=11).

Discussion

Overall, we found that respondents reported analgesic preferences that are recommended by the WMS. Most participants prefer NSAIDs and/or acetaminophen to treat acute pain, which mirrors the recent guidelines. The frequency of analgesic preferences reported by respondents coincides with the tiered approach to acute pain control recommended by the WMS, with the majority of respondents reporting a preference for NSAIDs.[6] We must note, however, that we did not survey on the use of pressure, rest, ice, compression,

Table 1. Characteristics of survey participants

Variable	*Participant statistics* % (n)
Demographics	
Age, yr	42 (±12)
Male	58 (72)
Education	
Physician	69 (86)
Physician assistant	9 (11)
Nurse practitioner	2 (2)
Nurse	3 (4)
Medical student	5 (6)
EMT (all levels)	12 (15)

EMT, emergency medical technician