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A Case Study of Pain Management at End-of-Life for a Patient on High-Dose Buprenorphine

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Abstract

In Australia, high-dose sublingual buprenorphine and long-acting injectable buprenorphine are available. High-dose buprenorphine is used predominantly in the setting of opioid use disorder and has a role in chronic pain. Palliative care specialists are increasingly involved in pain management and end-of-life care for patients on these medications, yet there is a lack of education and training about high-dose buprenorphine for palliative care specialists. We describe our experience caring for John (fictional name), a gentleman with chronic pain and a new high-grade post-transplant lymphoproliferative disorder prescribed high-dose buprenorphine. We share the challenges and experience in caring for John as he deteriorated into the terminal phase and died of his illness. We include potential management options and the rationale for our decision to rotate John from high-dose sublingual buprenorphine to subcutaneous oxycodone. We conclude with practice implications and suggestions for improved patient care and clinician experience, including increased collaboration between palliative medicine, acute pain, and addiction medicine services, increased education and training for palliative care specialists about high-dose buprenorphine, and ultimately the development of consensus high-dose buprenorphine to oral morphine equivalence guidelines.

Keywords

buprenorphine, palliative care, pain management, addiction medicine, case report

What is Known About the Topic?

Palliative care clinicians are increasingly likely to care for patients who are on high-dose buprenorphine for both pain or opioid use disorder, but limited guidance about pain management at end-of-life for these patients exists.

What Does This Paper add?

This case study highlights various considerations that may factor into end-of-life pain management for patients on high-dose buprenorphine, such as the site of care and clinician familiarity with medications.

What are the Implications for Practitioners?

Health care institutions and professionals, and therefore patients, would benefit from (1) education for palliative care specialists about the unique pharmacology of high-dose buprenorphine, (2) opioid management guidelines at end-of-life for patients on high-dose buprenorphine, and (3) collaboration and shared expertise between palliative care, addiction medicine, and acute pain services.

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Introduction

Buprenorphine is a semi-synthetic opioid with unique and complex pharmacology, including partial mu-agonism, kappa-antagonism, and delta and opioid-receptor-like 1 agonism (1–3). Its mixed partial agonism and agonist–antagonist profile provide a superior safety profile (reduced rates of sedation and respiratory depression) compared with full opioid agonists. This and its long half-life make buprenorphine useful in opioid agonist treatment (OAT) (2) for opioid use disorder and chronic pain (4). Buprenorphine can be administered via the sublingual, transdermal, subcutaneous, and intravenous routes (1). Palliative care clinicians are likely to have experience with buprenorphine patches (5,6), as well as low-dose sublingual buprenorphine preparations but are less likely to have experience with high-dose sublingual films or long-acting injectable buprenorphine. This is important because palliative care specialists are increasingly likely to care for people already on high-dose buprenorphine, partly related to the impact of chronic disease on the substance-using population and an increased understanding of the unique approaches required for chronic pain.

Despite buprenorphine being highly bound at mu-receptors, additional receptors may be available for other full opioids to provide effective analgesia, although higher doses may be required (7). Sublingual Suboxone® contains both buprenorphine and naloxone but given that naloxone is not absorbed significantly through the oral mucosa, buprenorphine–naloxone preparations should not precipitate withdrawal (7) or antagonize analgesia, providing hepatic metabolism is normal. Naloxone is included to minimize the risk of diversion and injectable use. Sublingual Subutex® contains buprenorphine only.

There are several recognized options for managing acute or cancer pain in someone on buprenorphine for OAT, including (7–9):

1. continue buprenorphine by splitting the once-daily dose into divided doses to utilize its 6-to-8-h analgesic cover period (sublingual buprenorphine has its onset at 30–60 min, and peak clinical effects at 1–4 h),
2. continue buprenorphine and use other short-acting opioids for pain, or
3. rotate buprenorphine to a full opioid agonist.

In addition, the buprenorphine dose can be increased and, in all cases, non-pharmacological strategies, such as music therapy and psychological support, should be implemented.

While the above approaches to pain management for patients on buprenorphine OAT are recognized (7,9,10), including in the peri-operative period (11), we were unable to find descriptions of opioid management at end-of-life for patients on high-dose buprenorphine be it for OAT or pain.

In addition, while guidelines to assist with buprenorphine opioid conversion exist, they carry wide variability and therefore must be used with caution (9). This is important as while we refer to estimates of oral morphine equivalent daily (OMED) in this article, the lack of reliability in opioid equianalgesic doses must be acknowledged. Some opioid calculators, such as those developed by the Faculty of Pain Medicine, Australia, and New Zealand College of Anaesthetists (12), allow for sublingual and transdermal buprenorphine conversions. However, they do not provide guidance beyond the use of low-dose buprenorphine doses and do not provide an indication about when buprenorphine doses might be providing an effective mu-receptor blockade.

Objectives

We present a patient on high-dose buprenorphine for pain management who deteriorated and died from a malignancy. We highlight the role of team collaboration and sharing of expertise to optimize the patient experience. While our case describes the use of high-dose sublingual buprenorphine for pain, the challenges and principles are relevant to other contexts including buprenorphine use for OAT.

Case Description* (Consent Provided Posthumously by Next-of-kin)

John was a 60-year-old gentleman who underwent a single-lung transplant for bronchiolitis/bronchiectasis. John also suffered from chronic pain related to juvenile arthritis and had been on sustained-release oxycodone 60 mg three times a day (OMED ~270 mg) for many years.

Five years post lung transplant, John developed new hip and pelvic pain and was found to have iliopsoas lymphadenopathy. Pain had both nociceptive and neuropathic features. Oxycodone titration was limited by the development of somnolence, and he was rotated to transdermal buprenorphine 80 mcg/h (OMED ~160 mg) over 5 days to prevent precipitation of withdrawal. Buprenorphine had the significant benefit of not causing somnolence, however, while pain improved, it was still troublesome. Transdermal buprenorphine was therefore rotated to once-daily sublingual buprenorphine 4 mg/naloxone 1 mg (OMED ~160 mg) to allow further titration. These changes were made with joint input from the Acute Pain Service and Consultation and Liaison Addictions Service due to their experience with high-dose buprenorphine (not because John had an addiction history).

Over a month, John's analgesia was up-titrated with good efficacy and tolerability, to twice daily buprenorphine 8 mg/naloxone 2 mg (OMED ~640 mg). In the setting of ongoing pain and a confirmed diagnosis of lymphoproliferative disorder, John was referred to palliative care. His pain continued to be managed jointly by the Acute Pain Service and the Palliative Care Service.

As John's malignancy progressed, the use of the sublingual films appeared to be challenged by xerostomia with compromised analgesia. Although naloxone in this situation is unlikely to be of relevance given its limited ability to

displace buprenorphine from mu-receptors, Suboxone® (buprenorphine/naloxone) was rotated to twice daily sublingual Subutex® (buprenorphine only) 4 mg (OMED ~320 mg), with a dose reduction in case of naloxone blockade of analgesia.

Over the following 5 months in the setting of progressive lymphoproliferative disease, buprenorphine was up-titrated to 16 mg twice daily (OMED ~1,280 mg) with significant improvement in analgesia. This was done through joint inpatient Acute Pain Service and Palliative Care Service reviews, and outpatient reviews with a pain specialist. Regular handover pathways were established between John's pain specialist, general practitioner, and community palliative care service. High-dose buprenorphine allowed an excellent balance of analgesia with reduced somnolence. This facilitated time at home with improved functional status, daytime wakefulness, and ability to participate in activities and conversations that were of great value, including advance care planning. John expressed a wish to die at home, which guided end-of-life planning as we were worried about an opioid regimen unfamiliar to clinicians, particularly in the community.

In planning for John's terminal phase, we considered the options of:

1. Continuing high-dose sublingual buprenorphine with breakthrough sublingual buprenorphine or a different short-acting opioid.
2. Converting high-dose sublingual buprenorphine to another opioid with which palliative care clinicians are more familiar.

We felt a familiarity with pain medications and regimens was an important factor, and therefore decided to proceed with an opioid rotation.

Given John's preference to die at home with the support of a community palliative care service not familiar with opioid rotations from high-dose buprenorphine, we planned an elective inpatient admission for an opioid rotation. Oxycodone was chosen as this had previously provided John reasonable analgesia, along with the understanding that oxycodone's analgesic properties are thought to be at least partially kappa-receptor mediated (13).

Our context is that high-dose buprenorphine is generally prescribed only under specialist guidance. Doses above 32 mg oral buprenorphine per day may be considered 'ultra' high-dose, and experience in prescribing such doses may be limited to addiction medicine specialists. As described above, equianalgesic conversions for high-dose buprenorphine are variable (9), and limited guidance exists for end-of-life pain management for patients on high-dose buprenorphine. The benefit of seeking support and guidance from the Acute Pain and Consultation and Liaison Addictions Service, which has more experience with high-dose buprenorphine was recognized by the Palliative Care Service.

Outcomes

John was admitted to the hospital with a plan for discharge home for end-of-life care. He had face-to-face contact with both the Palliative Care and Acute Pain Services and secondary consultation from the Consultation and Liaison Addictions Service. John's oral buprenorphine was ceased, and he was charted 10 mg subcutaneous oxycodone (30 mg oral morphine equivalent [OME]) every 2 h as needed with a plan that his oxycodone use would guide background oxycodone requirement.

Several doses of oxycodone were required within 8 h of John's last buprenorphine dose. Therefore, a continuous subcutaneous infusion of 40 mg (~120 mg OME) oxycodone was commenced, with provision for an additional 10 mg as needed. This infusion was up-titrated as needed, to a final dose of 200 mg (~600 mg OME)/24 h. It was important to note that in the early phase of the transition, buprenorphine would have a mu-receptor blocking effect which would persist, in a decremental manner, over 2 to 3 days.

During the admission, John experienced rapidly progressive disease, and expressed a change in preference to remaining in hospital for end-of-life care 'on a familiar ward with familiar staff'. John died five days after admission, ~6 months after his malignancy diagnosis.

In summary, John was rotated from twice daily 16 mg oral buprenorphine (~1,280 mg OMED) to subcutaneous oxycodone to facilitate analgesia and prevent opioid withdrawal at end-of-life. The dose at the time of death was 200 mg of subcutaneous oxycodone over 24 h (~600 mg OMED), the lower OMED anticipated due to incomplete opioid cross-tolerance. In the terminal phase, oxycodone provided John good analgesia without signs of toxicity.

While case reports are subject to limitations such as limited generalizability and a retrospective design, they provide a space for in-depth understanding and educational value (14). A strength of this case report is the representation of all three specialties among the authors.

Conclusion

Patients who require high-dose buprenorphine, be it for pain management or OAT, are at risk of fragmented end-of-life care and poorly managed pain due to health care unfamiliarity with their medication regimens. This can be mitigated by education and training opportunities, as well as health care systems having policies or guidelines to ensure that the right health care professionals are available to respond and collaborate at the right time, for the right patient. In our case, collaboration and shared knowledge between acute pain, addiction medicine, and palliative care services were important for John's end-of-life symptom management.

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Authors' Note

Consent for this case study was provided by the next-of-kin due to John (fictional name) having died prior to the case report being written. The consent form is attached. Further details are available upon request from the corresponding author.

Declaration of Conflicting Interests

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References

1. Coe MA, Lofwall MR, Walsh SL. Buprenorphine pharmacology review: update on transmucosal and long-acting formulations. J Addict Med. 2019;13(2):93-103.
2. Lutfy K, Cowan A. Buprenorphine: a unique drug with complex pharmacology. Curr Neuropharmacol. 2004;2(4):395-402.
3. Welsh C, Valadez-Meltzer A. Buprenorphine: a (relatively) new treatment for opioid dependence. Psychiatry. 2005;2(12):29-39.
4. Chong J, Frei M, Lubman D. Managing prescription opioids in patients with non cancer pain. Australian J Gen Pract. 2020;49(6):339-343.
5. Eastern Metropolitan Region Palliative Care Consortium. Opioid conversion ratios guide to palliative care practice 2016. 2016. https://www.emrpcc.org.au/uploads/135/Opioid-Conversions-May-2016.pdf
6. NHS Scotland. Scottish palliative care guidelines: Buprenorphine patches. 2020. https://www.palliativecareguidelines.scot.nhs.uk/guidelines/medicine-information-sheets/buprenorphine-patches.aspx. Accessed March 23, 2021.
7. Haber LA, DeFries T, Martin M. Things We Do for No reason™: discontinuing buprenorphine when treating acute pain. J Hospice Med. 2019;14(10):633-635.
8. Khanna IK, Pillarisetti S. Buprenorphine—an attractive opioid with underutilized potential in treatment of chronic pain. J Pain Res. 2015;8:859-870.
9. Jones KF. Buprenorphine Use in palliative care. J Hosp Palliat Nurs. 2019;21(6):540-547.
10. Childers J, Horowitz R, Broglio K, Jangro W. No patient left behind: integrating addiction treatment with buprenorphine into your outpatient palliative care practice (TH316). J Pain Sympt Manage. 2019;57(2):372-373.
11. Lembke A, Ottestad E, Schmiesing C. Patients maintained on buprenorphine for opioid use disorder should continue buprenorphine through the perioperative period. Pain Med. 2019;20(3):425-428.
12. Australian and New Zealand College of Anaesthetists. Opioid calculator. 2019. http://www.opioidcalculator.com.au/opioidsource.html. Accessed March 23, 2021.
13. Snyder B. Revisiting old friends: update on opioid pharmacology. Aust Prescr. 2014;37(2):56-60.
14. Nissen T, Wynn R. The clinical case report: a review of its merits and limitations. BMC Res Notes. 2014;7:264.