Clinical Case Report

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Successful treatment of refractory cancer pain with morphine and ropivacaine

A case report

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Abstract

Rationale: Pain is one of the most common and distressing symptoms experienced by cancer patients. Cancer pain is a complex phenomenon with physical, psychological, social, and cognitive domains. Although opioids remain a cornerstone of cancer pain management, they are not effective in all patients. This case highlights the successful treatment of an opioid-refractory severe cancer pain crisis with ropivacaine infusion and subsequent rapid tapering of opioid dose.

Patient concerns: This report illustrates the use of ropivacaine for cancer pain. A 62-year-old man with metastatic lung cancer was admitted to the hospital with uncontrolled chest-back and abdominal pain.

Diagnoses: The patient was diagnosed as refractory cancer pain.

Interventions: Successful treatment with morphine and ropivacaine was performed to obtain longer opioid refractory severe cancer pain.

Outcomes: At 1, 3, and 6 months postoperative review, 70-75% relief of pain was achieved with overall activity was improved. The analgesic effect was stable during the 6-month follow-up period. No complications were reported during the follow-up period.

Lessons: Our report demonstrates that ropivacaine is successful treatment for cancer pain in this case. It will supply us a novel navigation in cancer pain treatments. Meanwhile, this finding still needs additional study for confirmation.

Abbreviations: PCA = Patient Controlled Analgesia, VAS = visual analog scale.

Keywords: Cancer pain, Morphine, Ropivacaine

1. Introduction

Pain is one of the most common and distressing symptoms experienced by cancer patients. Patients with advanced cancer experience physical, psychological, family-related, health care facility-related, emotional, spiritual, and existential distress, all of which contribute to "suffering".[1–3] Cancer pain is a complex phenomenon with physical, psychological, social, and cognitive domains. Cancer pain may correspond to nociceptive pain, generally relieved by the administration of opioid analgesics, neuropathic pain, requiring the use of specific medications such as anticonvulsants or antidepressants, and often mixed pain.[4–6]

Opioids remain the mainstay of treatment for severe cancer pain, but up to 20% of patients have persistent or refractory pain despite rapid and aggressive opioid titration, or develop refractory pain after long-term opioid use.[7] Ropivacaine is a local anesthetic drug belonging to the amino amide group. At subanesthetic doses, it reduces neuronal excitability, thereby promoting analgesia and reducing opioid-induced hyperalgesia.[8]

Although opioids remain a cornerstone of cancer pain management, they are not effective in all patients. Moreover, adverse and side reaction always appeared during the pain treatment. This case highlights the successful treatment of an opioid-refractory severe cancer pain crisis with ropivacaine infusion and subsequent rapid tapering of opioid dose, with the effects lasting the follow-up period. Meanwhile, no complications were reported during the follow-up period. It also reflects the limitations of high-dose opioid escalation for refractory pain. To our knowledge, no study has been previously reported about morphine and ropivacaine on the context of palliative care.

2. Case report

A 62-year-old man with metastatic lung cancer was admitted to the hospital with uncontrolled chest-back and abdominal pain. His oncologic history began 1 year previously in the hospital

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This study was approved by the local ethical committee.

The authors report no conflicts of interest.

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where imaging demonstrated thoracolumbar vertebral metastatic tumors. He experienced disease progression and poor tolerance to chemotherapy regimens. Two months ago, he was experiencing the progression of chest-back and abdominal pain. Imaging examinations showed metastatic thoracolumbar vertebral tumors (T6, L4, and bilateral hip bones).

Approximately 2 weeks ago, the patient came to our hospital and institution. He was experiencing chest-back and abdominal pain, rated as a 9 out of 10 on the visual analog scale (VAS).

His analgesic history included oral oxycontin (200 mg twice a day) and oxycodone-acetaminophen (10 mg twice a day). After taking medicine, his pain rated as a 6 out of 10 on the VAS. Continuous pain made him very weak, and it is hard to be tolerated the adverse reactions caused by the analgesics, such as nausea, vomiting, and constipation.

After admission, we give the treatment plan for him: relieving the pain through intrathecal pumping morphine. Before the operation, we carry out the treatment with 1 mg morphine intrathecal injection. His pain has been relieved for 4 h, rating as 4/10 VAS.

The next day, intrathecal infusion system implantation was performed under the C-arm guided. We diluted 100 mg morphine with 200 mL 0.9% normal saline and injected into the PCA (Patient Controlled Analgesia) electronic pump. With the minimum infusion rate of PCA electronic pump is 0.1 mL/h, we set the initial background infusion as 0.2 mL/h, converting into morphine 2.4 mg/d. When it is necessary, additional bolus doses could be 0.2 mg every time following as 4-h lock time. Additional bolus doses should be no more than 1/10 of total 24-h background dosage. All the other opioids were not allowed to be used after the intrathecal analgesic treatment. Then, we adjusted the intrathecal morphine dose by increasing the infusion rate every day.

However, the patient demonstrated the relief of his pain was not obvious. Then, we adjusted the intrathecal morphine dose by increasing the infusion rate every day. When we increased the background infusion as 4.8 mg/d gradually, he could feel a little relief from the pain, rating as 6/10 VAS. When we adjusted the background dose into 8.4 mg/d, the patient was satisfied with the curative effect, rating as 3/10 VAS. But retention of urine was following.

We decided to carry out another treatment: intrathecal injection with 3 mL 0.2% ropivacaine (naropin; Astrazeneca Pharmaceutical Co. Ltd.) and 1 mg morphine. His pain relieved for 4 h with 2/10 VAS. We diluted 100 mg morphine and 400 mg ropivacaine with 200 mL 0.9% normal saline to the PCA pump. Background infusion: 4.8 mg morphine every day, 19.2 mg ropivacain every day. The pain was estimated at 1–2/10 VAS. Meanwhile, the urinary retention was not observed.

After operation, the patient reported pain went from 9/10 to 1/10 on the VAS. Then, the patient discharged and came back to hospital regularly to replace the PCA pump. He was visited at 1, 3, and 6months postoperation. After 1 month, he reported a significant improved in sleep, in mood, and in daily activities. Moreover, 3 months 2–3/10 VAS and 6 months later, his pain still reached 3/10 VAS, compared with the baseline visual analog scale (9/10), his overall pain has decreased by 70% to 75%. He necessarily need for pain medications when the pain level reached 4/10 VAS. However, the doses and frequencies of medicine significantly decreased. No complications were reported during the follow-up period.

3. Discussion

Although opioids remain a corner stone of cancer pain management, they are not effective in all patients.[9–10] As this patient's pain and opioid regimen escalated, he likely experienced some component of central sensitization and hyperalgesia. In the report, combining with ropivacaine, morphine requirements decreased up to 50%, with relief lasting from several days up to following-up period. From admission to discharge, our patient's pain rating decreased 75%–80% and his opioid use decreased by 50%, allowing for transition of this PCA. His pain control lasted at least 6 months follow-up period. To our knowledge, this is the first case report demonstrating such a dramatic (50%) and rapid opioid wean in the context of improved pain control under the treatment with morphine and ropivacaine. Moreover, no complications were reported during the follow-up period. It also documents an enduring analgesic response that did not require a transition to oral ropivacaine in the outpatient setting. In a word, it will supply us a novel navigation in cancer pain treatments. Meanwhile, this finding still needs additional study for confirmation.

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