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CLINICAL REPORT

Intrathecal neurolytic block in a patient with refractory cancer pain

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Abstract We report the successful treatment of refractory cancer pain by bilateral intrathecal neurolysis using phenol–glycerol. A 60-year-old man had recurrent sigmoid cancer and metastases to the lumbar (L4–5) and sacral bones. He complained of refractory pain in the lower back and lower extremities despite high-dose opioid treatment based on the WHO ladder. On admission to our hospital, he received continuous intravenous infusion of morphine (7,000 mg/day) with ketamine (300 mg/day) and lidocaine (700 mg/day). Intravenous midazolam was required to treat extreme anxiety. Because of inadequate pain relief and severe drowsiness, intrathecal phenol–glycerol neurolytic block was performed twice at the L2/3 intervertebral space. His analgesia was greatly improved and high-dose intravenous opioid was retitrated and ceased. He remained comfortable and lucid at home for 2 months, until 2 days before his death at hospital. Intrathecal neurolytic block may be appropriate for some patients suffering from refractory pain that is resistant to conventional opioid analgesic treatment.

Keywords Cancer pain · Neurolytic block · Phenol–glycerol

Introduction

Cancer pain associated with lumbosacral plexopathy due to pelvic tumor or bone metastases is often intractable. Although the three-step analgesic ladder approach devised by the World Health Organization (WHO) works well in treating 80–90% of these patients, the remaining 10–20% of patients with unrelieved cancer pain may benefit from other pain-management therapy [1, 2]. These additional treatments could be called Step 4 of the analgesic ladder [3].

We report here that bilateral intrathecal phenol–glycerol neurolysis reduced pain intensity and improved the quality of life in a patient who had required very high doses of intravenous morphine and adjunctives for cancer pain.

Case report

A 60-year-old man with locally advanced sigmoid colon cancer with metastases to the lumbar (L4–L5) and sacral spine and bilateral lumbosacral plexus regions was admitted to our hospital from another hospital for refractory cancer pain. He had undergone radical sigmoidectomy and colostomy 4 years earlier and had received radiotherapy and chemotherapy. He was admitted to another hospital because of severe pain (score of 4 on a 0–5 face pain scale) 5 months previously and analgesic treatment was started with the intravenous administration of morphine. His morphine dose was increased to 7,000 mg/day along with ketamine at 300 mg/day and lidocaine at 700 mg/day over 4 months without any apparent analgesic benefit. He was also receiving prednisolone (20 mg/day), sodium valproate (400 mg/day), and meloxicam (10 mg/day) orally. Intravenous midazolam (20 mg/day) was used to treat the patient's extreme anxiety.

Upon admission to our hospital, he presented with pain in the lower back and lower extremities that manifested as continuous tingling and burning sensations extending to the

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ankles, with radicular pain in the lower extremities that was more severe with movement. He also reported numbness and dysesthesia in these regions. He complained of constant severe pain (score of 4 on a 0–5 face pain scale) with repeated breakthrough pain without any overt impetus. He also reported sleep disturbance, severe drowsiness during the daytime, difficulty with oral intake, and the inability to leave his bed. He experienced urinary retention and paresis of the lower extremities with muscle weakness and atrophy. His pain may have been attributed to a combination of somatic bone pain and neuropathic pain from the lumbosacral metastases and plexopathy. He hoped to be able to go outside in a wheelchair with a pain score below 2. An increase of the analgesic adjuvant dose was considered; however, this treatment was considered unlikely to reduce his somatic bone pain. Moreover, he could not maintain a sitting position. After discussing the risks and benefits of intrathecal neurolytic block with him, he decided to receive this treatment for pain relief. Because the effect of a test nerve block would last only for a few hours and the dose of morphine could not be regulated safely during the test, we did not perform a test nerve block on this patient.

On day 3 of hospitalization in our department, subarachnoid puncture was performed via a median approach in the left lateral position at the L2/3 intervertebral space, at a safe distance from the L4–5 metastases. Phenol–glycerol (10%, 1.5 mL) was injected using a 22-gauge needle, and the patient was returned to the 30° head-up tilt supine position immediately thereafter, because it was difficult for him to assume a lateral position even for a short period. The dose used for the patient was determined on the basis of our experience. Satisfactory analgesia was achieved up to the Th11 level on the left side, but only the L1 level on the right side. After this treatment, intravenous infusion of morphine was regarded by 50% to 3,500 mg/day and midazolam was discontinued. On the following day, the same procedure was performed with the same dose of phenol–glycerol (10%, 1.5 mL) at the L2/3 intervertebral space in the right lateral position, and satisfactory analgesia was achieved to the Th11 region on the right side. These procedures resulted in complete paralysis of both lower extremities. After the second treatment, intravenous infusion of ketamine and lidocaine was completely stopped, and morphine dose was reduced to 1,750 mg/day. On hospital day 5, the dose of morphine was reduced to 875 mg/day because of severe sedation and respiratory depression (respiratory rate <8 bpm). Morphine was then gradually reduced on a daily basis. On hospital day 10, opioid use was changed from morphine (50 mg/day) to fentanyl (300 μg/day) because of mild cognitive impairment, confusion, and delirium. On hospital day 15, all administration of intravenous opioids was suspended without any adverse events.

The patient was able to move by himself in a wheelchair, and his pain scale was maintained between 0 and 1 on a 0–5 face pain scale, using a 50-mg diclofenac sodium suppository for his residual paroxystic perineal pain. The patient was discharged from hospital on hospital day 32, and stayed with his family at home using home-care nursing. Two months later, he was admitted to our hospital again by ambulance because of his poor general condition, and he died 2 days later. Although the period that the patient had spent at home was short, both the patient and his family greatly appreciated the high quality of the time at home.

Discussion

Pain is one of the most feared symptoms for most cancer patients. Approximately 10–20% patients with advanced cancer have refractory pain that is difficult to manage with the WHO analgesic approach, and these patients may benefit from other interventional therapy, which may range from less invasive (reversible nerve blocks) to more invasive techniques, for example regional or irreversible neurolytic blocks. Although neuraxial analgesia can provide excellent pain relief while avoiding the adverse effects of opioids, it should be used in patients for whom less invasive treatment such as oral/intravenous opioids failed to provide adequate pain control. As has been reported [4] in recent years, indications for intrathecal neurolytic block have significantly decreased, because of advances in spinal analgesia with continuous infusion of local analgesics and/or opioids and the longer prognosis with high quality of life in cancer patients. However, intrathecal neurolytic block still plays an important role in the management of refractory cancer pain. The advantages of neurolytic techniques include fewer follow-ups compared with regional analgesic techniques using continuous neuraxial drug delivery and greater cost-effectiveness for patients [4–9]. Potential problems related to intrathecal neurolysis include inadequate pain control with the progression of tumor size, short duration of effect, weakness of lower limb muscles, and rectal/bladder sphincter dysfunction. Thus, we should give special considerations to the potential risks and benefits of the procedures. Our patient already had paresis of the lower extremities and colostomy, and therefore neurolytic treatment was suitable for obtaining rapid pain control and reducing his distress.

It has been reported that the best results were obtained when intrathecal neurolysis was used for somatic bone pain [10]. Chemical agents commonly used for neurolysis are 50–100% ethanol and 7–12% phenol. In our patient, 10% phenol–glycerol, a hyperbaric solution, was used because

of its greater intensity and lower frequency of neuritis compared with ethanol.

The effects of neurolytic therapy typically persist for 3–6 months. Indications for intrathecal neurolysis should thus include patients with short life expectancy (less than 6 months) and with intractable/well-localized cancer pain [5, 9]. The prognosis of patients with advanced cancer is an important consideration for selection of appropriate interventional therapy. It is also important for patients and their families to understand that these interventional procedures do not completely eliminate cancer-related pain. In this case, bilateral intrathecal neurolysis resulted in almost complete analgesia and in the discontinuation of high doses of opioid and adjunctives, enabling the patient to experience a dramatic improvement in the quality of his remaining life. He spent 2 months at home without the additional need for nerve-block therapy. Neither neuritis nor deafferentation pain occurred during this period. In addition to these benefits, the drastic decrease in the costs related to analgesics is a specific advantage from a medical economic point of view.

In conclusion, intrathecal phenol–glycerol neurolytic block may be a very effective and important therapy for achieving rapid pain control and for reducing distress during the care of patients with refractory cancer pain. An appropriate and timely interventional procedure can dramatically reduce the requirement for systemic opioids and can improve quality of life.

Conflict of interest None.

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