

Successful Reduction of Neuropathic Pain Associated With Spinal Cord Injury Via a Combination of Intrathecal Hydromorphone and Ziconotide: A Case Report

Michael Saulino, MD, PhD

Physiatrist, MossRehab; Assistant Professor, Dept. of Rehabilitation Medicine, Thomas Jefferson University, Philadelphia, Pennsylvania, USA

Objective

To report a novel management strategy for neuropathic pain management after spinal cord injury.

Introduction

SCI pain:

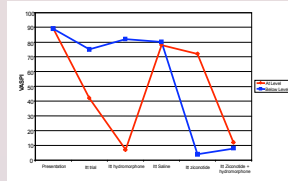
- Common clinical problem
- Classifications
 - Neuropathic : above-, at- and below-level
 - Somatic
 - Visceral

Intrathecal medication delivery

- Well recognized technique for chronic severe pain
- Agents:
 - FDA Approved: morphine, ziconotide, baclofen
 - Non FDA approved: hydromorphone, bupivacaine, clonidine

Demographics

- 23 year old white female
- T5 ASIA A paraplegia
- No orthopedic stabilization
- Neurogenic bowel and bladder
- No significant hypertonicity
- PMH: allergic rhinitis and hypothyroidism



Case Report

Two discrete pain syndromes:

- 1) Constant, band-like pain across the chest, subsequently referred to as her at-level pain
 - 2) Paroxysms of shooting, electrical-like pain in the thighs, calves and groin, subsequently referred to as her below-level pain
- Present within one week of injury
 - 14 years post injury at the time of presentation
 - No specific or exacerbating factors
 - No allodynia or hyperalgesia

Treatment failures:

- Tricyclic antidepressants (amitriptyline and nortriptyline)
- Anticonvulsants (phenytoin, tegretol and gabapentin)
- Biofeedback
- Hypnosis
- Spinal cord stimulation

Presentation:

- 300 and 400 mg of oxycodone daily
- Partially effective for her at-level pain
- Ineffective for her below-level pain
- VASPI= 89 for the combination of both pain syndromes

Initial intrathecal trial

- Oxycodone dose was weaned to 200 mg/day
- Temporary intrathecal catheter placed
- Catheter tip at T7 spinal level.
- Continuous infusion of morphine at 1 mg/day
- Developed intrathecal morphine-induced hyperalgesia

Second intrathecal trial

- Similar weaning and catheter placement
- Continuous infusion of hydromorphone at 200 mcg/day titrated to 1100 mcg per day
- Partial pain relief from her at-level pain VASPI=42
- Minimal effect on her below-level pain VASPI=75

Permanent intrathecal implantation

- Starting dose 500 mcg/day of hydromorphone
- Titrated to 8.5 mg/day of hydromorphone
- Adjuvants trial: clonidine, bupivacaine, baclofen
- Best relief: 8.5 mg/day of hydromorphone + 400 mcg/day of baclofen
- At-level pain VASPI = 7
- Below-level pain VASPI = 82
- Oxycodone dose 75 and 90 mg/day

Weaning from intrathecal mixture:

- Weaned to saline over 30 days
- Saline infusion x 10 days
- Oxycodone dose increased to 420 mg/day
- Mild withdrawal symptoms: bifrontal headaches
- At-level pain VASPI = 78
- Below-level pain VASPI = 80

Intrathecal ziconotide trial

- Starting dose = 2.4 mcg/day
- Titrated 0.5 to 0.6 mcg/day every 12-14 days
- Achieved 10 mcg/day
- Oxycodone dose decreased to 200 and 250 mg/day
- At-level pain VASPI = 72
- Below-level pain VASPI = 4

Intrathecal ziconotide / hydromorphone combination

- Intrathecal ziconotide increased to 11 mcg/day
- Initial hydromorphone dosing 0.44 mcg/day
- Monthly for dosing adjustments for hydromorphone titration
- Ultimately achieved excellent pain relief while receiving 11 mcg of ziconotide and 1.32 mg of hydromorphone daily
- At-level pain VASPI = 12
- Below-level pain VASPI = 8
- Oxycodone dose < 60 mg/day

Results

The patient's at-level pain was responsive to intrathecal hydromorphone but the below-level pain was unaffected by this intervention. Intrathecal ziconotide provided an opposite response with a positive effect observed on the below-level pain and minimal effect on the at-level pain. The combination of intrathecal ziconotide and hydromorphone provided effective relief for both components of the patient's spinal cord injury associated neuropathic pain.

Conclusion

The combination of intrathecal ziconotide and hydromorphone has the potential to provide significant pain relief for patients with neuropathic pain associated with spinal cord injury.

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