The Role of an Intrathecal Drug Delivery Morphine Pump for Management of Chronic Pain

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Disclosures

• The authors have no competing interests to declare
Introduction

• We are currently facing an opioid epidemic in which physicians are facing challenges in treating patients with chronic pain.

• A low dose intrathecal morphine pump is a safe and efficacious alternative to current practices that can allow for adequate control of pain in this patient population.

• More importantly, this can reduce the mortality and morbidity related to high doses of oral, transdermal, and intravenous opioids.
Methods

• We performed 53 consecutive intrathecal drug delivery morphine pump procedures at St. James Mercy Hospital, University of Rochester, New York during the period of Dec. 2015 to Dec. 2018.

• An outpatient intrathecal morphine trial was performed by injecting a single dose of 0.1-0.3 mg of preservative free morphine in the lumbar intrathecal space.

• Inclusion Criteria: If there was more than a 60% reduction in pain symptoms using the 0-10 numeric pain rating scale when compared to baseline pain levels, after a 2-4 week period of weaning patients off and stopping all other forms of opioid ingestion, a permanent intrathecal catheter and morphine pump was then implanted.

• An intrathecal drug delivery morphine pump was then programmed to deliver low dose 0.06-0.6 mg of morphine over 24 hours in a simple continuous or flexible mode.
Results

• 53 patients were selected to undergo the morphine trial with follow up placement of a morphine pump, 28 were female and 25 were male.

• The age range was 34-76 years with a mean of 55 years. The follow up period was 3-36 months.

• All 53 patients selected for the morphine trial underwent intrathecal morphine pump placement.

• All 53 patients were satisfied with pain control, which was 80-100%. The infection rate was zero and there were no complications.
Results (cont.)

<table>
<thead>
<tr>
<th>Demographic Data:</th>
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<tbody>
<tr>
<td>Male</td>
<td>25</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
</tr>
<tr>
<td>Mean Age</td>
<td>55</td>
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Results (cont.)

• There was a mean reduction in pain of 8.39±1.2 points out of a 10 point scale after placement of the intrathecal morphine pump

• 19 patients found a 100% reduction in pain and reported pain scores of 0 after intrathecal pump placement

<table>
<thead>
<tr>
<th>Mean reduction in pain</th>
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<tbody>
<tr>
<td>8.39±1.2</td>
<td>&lt;.01</td>
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</table>
Results (cont.)

• There were no complications with no infections, no bleeding, and no need for revision

<table>
<thead>
<tr>
<th>Dosing Conversion:</th>
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<tbody>
<tr>
<td>Average Intrathecal Pump Dosage of Morphine</td>
<td>0.2mg/day</td>
</tr>
<tr>
<td>Average PO dosage of morphine used prior to intrathecal pump placement</td>
<td>90mg/day</td>
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<tr>
<td>Ratio of oral: intrathecal dosing</td>
<td>450:1</td>
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Discussion

• The efficacy of an intrathecal morphine pump is likely related to a slow titration of morphine release over a 24 hour period

• Our ratio of 1:450 intrathecal:oral morphine can be compared to previously reported equianalgesic ratios of 1:300 or 1:90. This data suggests that a much lower dosage of intrathecal morphine can be used for greater pain control through this method than previously reported.
Summary Points

• The Intrathecal drug delivery morphine pump has a high success rate of pain control in a selected group of patients with chronic pain, even when other therapies failed to control their chronic pain.

• Much lower doses of intrathecal morphine were required to achieve adequate pain control than previously known, suggesting that this method can reduce overall opioid usage in this population.