Gastrointestinal Adverse Effects Associated with the Use of Intravenous Oliceridine Compared to Intravenous Hydromorphone or Fentanyl in Acute Pain Management Utilizing Indirect Treatment Comparison Methods

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Methods

Literature Search


Background

• Indirect treatment comparisons (ITCs) are used to compare treatments when there is no or insufficient evidence from head-to-head clinical trials.
• ITCs compare effects of treatments vs. a common comparator, often placebo.
• Unbiased ITCs require homogeneity, study similarity, and consistency of evidence.
• Treatment for post-operative acute pain management commonly includes opioids (e.g., morphine, hydromorphone, fentanyl), which have adverse effects (AEs) such as nausea and vomiting. In late 2020, oliceridine was approved for use in the treatment of acute pain severe enough to require an intravenous opioid analgesic and for whom alternative treatments are inadequate.
• The effects and AEs of oliceridine, fentanyl, and hydromorphone have been directly compared to morphine in clinical trials.
• No clinical trials have directly compared oliceridine to fentanyl or hydromorphone.

Objectives

• Identify potential opioid comparators and AEs of interest.
• Conduct an ITC between oliceridine vs. morphine clinical trials and studies evaluating fentanyl and/or hydromorphone vs. morphine.

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Results

• In studies where oliceridine, fentanyl, and hydromorphone were compared to morphine, the only common AE was nausea and vomiting, with similar endpoints and sufficient incidence to be compared.
• Patients treated with oliceridine were less likely to develop nausea and vomiting than patients treated with hydromorphone or fentanyl.
• The NNT analysis showed oliceridine’s NNT was a low number (<10) compared to fentanyl and hydromorphone.

Table 1: Baseline demographics and clinical characteristics of populations

<table>
<thead>
<tr>
<th>Population</th>
<th>Male, N (%)</th>
<th>Female, N (%)</th>
<th>Mean age, Median (95% CI)</th>
<th>Pain responder rates 48h post-surgery*</th>
<th>Mean Change Pain Score Baseline - 2h**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oliceridine</td>
<td>65 (82.3)</td>
<td>66 (83.5)</td>
<td>61 (59-63)</td>
<td>62.0%</td>
<td>-5.4 (-6.5 to -4.3)</td>
</tr>
<tr>
<td>Morphine</td>
<td>65 (85.5)</td>
<td>65 (82.3)</td>
<td>61 (59-63)</td>
<td>62.0%</td>
<td>-5.4 (-6.5 to -4.3)</td>
</tr>
</tbody>
</table>

Conclusions

• When AEs were compared in an adjusted ITC analysis using morphine as the common comparator, oliceridine was found to significantly reduce the incidence of nausea and/or vomiting or the need for antiemetics in orthopedic surgical procedures compared to hydromorphone or fentanyl. Results in plastic surgery were not significantly different.
• The NNT analysis, comparing oliceridine to both fentanyl and hydromorphone, showed a low number (<10), indicating a favorable GI tolerability profile of oliceridine versus fentanyl or hydromorphone.
• Despite their limitations, ITCs can be useful for healthcare decision makers.
• Providers can use results to support use of oliceridine in patients at risk of nausea and vomiting.
• Payers may consider results for reimbursement and benefit design between similar drugs in the class.
• The NNT results may be helpful in the peri-operative setting where vomiting episodes can disrupt the healthcare team and decrease patient satisfaction.

Limitations

• Limited data availability for the ITC
• Limited sample sizes in groups studied
• Doses not always directly comparable
• Differences in outcome definitions

Table 2: ITC Analysis Results

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Difference in NNT</th>
<th>NNT 95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea</td>
<td>3.85</td>
<td>2.81-5.41</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vomiting</td>
<td>3.85</td>
<td>2.81-5.41</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

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References