Use of Ondansetron for Pruritus Associated with Neuraxial Opioids

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ABSTRACT

Pruritus is a common post operative complication following intrathecal administration of opioids with obstetric patients. This often leads patients to be dissatisfied with their care and potentially lowers hospital customer service scores. The intent of this project was to inform current providers that ondansetron can be used prophylactically to reduce the severity of pruritus and as a preventative measure for pruritus. Surveys were utilized to determine if current patients experience pruritus and what the providers used to prevent and treat pruritus. A convenience sample of 11 patients, 16 obstetric nurses, and 13 anesthesia providers were surveyed over a two week period. It was found from the convenience sample of obstetric patients at Texas Health Presbyterian – WNJ that 73% of patients over a 2 week period experienced post operative pruritus. Additionally, after reviewing the providers’ standards of practice, it was noted ondansetron was not utilized. As a result, the providers were given a pamphlet describing the results of the surveys, as well as a recommendation to implement ondansetron into their practice. One hundred percent of the providers said they were willing to try using ondansetron in the future for pruritus.
PART ONE

Introduction

Common adverse side effects related to the use of neuraxial opioids in the obstetric population include nausea, vomiting, and pruritus.\textsuperscript{1,2,3,4} Although pruritus is not life-threatening, it can be a source of discomfort for many obstetric patients. The incidence of pruritus has been reported to be between 60% and 100%.\textsuperscript{5} The reason for the higher incidence may be due to an interaction between estrogen and opioid receptors.\textsuperscript{5,6,7} Although the exact mechanisms of opioid induced pruritus are not fully understood, a possible mechanism was described by Waxler, Dadabhoy, Stojiljkovic, and Rabito\textsuperscript{8} who stated itching could be a result of neuraxial opioids acting on central serotonin receptors. Therefore, serotonin ($5$-$HT_3$) receptor antagonists, in particular ondansetron, have been identified as possible antipruritic agents. The purpose of this project was to implement the current evidence regarding the use of ondansetron to help alleviate the severity and to treat pruritus in obstetrical patients when using neuraxial morphine at Texas Health Presbyterian - WNJ.

Overview

Rosswurm-Larrabee’s Model for Change to Evidence Based Practice was the guiding framework used for this project. A model of this framework will be illustrated in a step by step implementation plan along with the results achieved. From the results of implementation, an evaluation of the process and outcomes will be derived and conclusions will be declared. Lastly, the paper will discuss the implications of the intervention and what lessons were learned.

Methodology

The databases of MEDLINE, CINHAL, and ScienceDirect were searched using key terms “pruritus,” “itching,” “opioids,” “labor,” “cesarean,” “5-HT3,” “ondansetron,”
“granisetron,” dolasetron,” and “tropisetron.” Studies that examined 5-HT₃ receptor antagonists against a placebo were chosen. No language restrictions were used in the searches. In addition, the references of selected studies were screened. Trials selected had to report the incidence and severity of pruritus as main endpoints. Abstracts and letters were excluded.
PART TWO

Background

As stated in the introduction, the incidence of post operative pruritus for patients receiving neuraxial opioids is greater than 60%. It is likely the high incidence contributes to a decreased patient satisfaction level. The intention of this project was to survey patients to see if post operative pruritus existed and to review current standards of practice at Texas Health Presbyterian – WNJ hospital.

Review of Literature

A quantitative systematic review evaluated the efficacy of serotonin receptor antagonists in preventing and treating pruritus, nausea, and vomiting in women having cesarean sections.\(^9\) Nine randomized control trials were included with a total of 1,152 women. The review found no reduction in the incidence of pruritus from the prophylactic use of the 5-HT\(^3\) antagonists. However, data suggested the use of prophylactic 5-HT\(^3\) antagonists significantly reduced the need for treatment for pruritus and the severity of pruritus. Additionally, one study was reviewed for treatment of established pruritus. Ondansetron was significantly better than placebo in the treatment of established pruritus. Overall, the authors found the 5-HT\(^3\) antagonists did not reduce the incidence of pruritus but did reduce the incidence of severe pruritus and the need for treatment.

In another quantitative systematic review, the authors evaluated the prophylactic use of 5-HT\(^3\) receptor antagonists for pruritus resulting from neuraxial opioids.\(^6\) Fifteen randomized, double-blind, controlled trials were included with a total sample size of 1,337. The overall results demonstrated the 5-HT\(^3\) receptor antagonists reduced the risk of pruritus by 12%. They found when morphine was used as the neuraxial opioid, the 5-HT\(^3\) receptor antagonists provided a
decrease in the incidence and the severity of pruritus. However, with the administration of the lipid-soluble opioids, the 5-HT$_3$ receptor antagonists did not reduce the incidence of pruritus. The authors suggested the lipid-soluble opioids have rapid onset and less residual opioid concentration in the CSF. Therefore, the opioids likely reached the 5-HT$_3$ receptors before the 5-HT$_3$ antagonists.\textsuperscript{10,11,12}

In a different prospective, randomized, double-blind, placebo-controlled study, ondansetron’s efficacy in treating pruritus induced by spinal or epidural morphine was evaluated.\textsuperscript{13} The study included 100 patients of both sexes who were undergoing orthopedic surgery. The ondansetron group had a 70% success rate in the reduction of pruritus while the placebo group had a 30% success rate. While this study did not address prevention of pruritus or focus on obstetric patients, it did find ondansetron was an effective treatment for pruritus induced by spinally or epidurally administered morphine.

Krajnik and Zylicz discussed possible causes of opioid induced pruritus.\textsuperscript{14} They described how morphine may cause activation of serotonergic pathways. The authors supplied evidence from a study which found tropisetron reduced itching caused by serotonin. Waxler, Dadabhoy, Stojiljkovic, and Rabito also explored possible mechanisms of opioids induced itching.\textsuperscript{8} The authors stated neuraxial opioids act on the 5-HT$_3$ receptors which are located centrally on the dorsal horn of the spinal cord. The receptors also have been found concentrated in the trigeminal nucleus of the medulla. The authors supplied evidence from several studies showing efficacy of ondansetron in treating neuraxial opioid induced pruritus. However, they also provided evidence that ondansetron did not reduce the incidence of pruritus or reduce itching when lipophilic opioids were used.\textsuperscript{10,11,17} The authors proposed the lipophilic opioids reached the serotonin receptors before ondansetron.
DeBalli and Breen reviewed the use of intrathecal opioids for labor analgesia and suggested if nausea and pruritus are experienced together, the use of a 5-HT₃ receptor antagonist becomes the primary drug of choice.¹⁵

A tabulated outline of the levels of evidence is shown in Appendix A.

**Synthesis of Literature**

Pruritus has been linked to the serotonin receptor.⁸,¹⁴ Opioids act on the 5-HT₃ receptors located centrally on the dorsal horn of the spinal cord. Serotonin antagonists may not prophylactically reduce the incidence but may reduce the need for treatment and the overall severity of pruritus. Therefore, 5-HT₃ antagonists may provide the most effective prevention and treatment. However, it does not work as well with lipophilic opioids (fentanyl) as it does with morphine.¹⁰,¹¹,¹⁷ It is proposed by Waxler et al. that this is probably due to the onset of action of the lipophilic opioids occurring before ondansetron reaching the receptors.⁸ It is not known why ondansetron is effective in treatment once the opioids have reached the receptors and triggered the pruritus. Ondansetron has a 70% success rate in treating (versus preventing) pruritus.¹³
PART THREE

Intervention overview

From the synthesis of literature, it was found that using ondansetron can reduce the severity of pruritus as well as treat pruritus after it occurs. Given this information, a survey of the patients, obstetrical staff, and anesthesia providers was conducted to measure the significance of pruritus as a perceived problem. In addition, the surveys of the obstetrical staff and anesthesia providers assessed the awareness of the benefits of using ondansetron in this manner.

Intervention

The specific intervention that emerged from the literature was to inform the obstetric nurses and anesthesia staff about the possible benefits of using ondansetron prophylactically and as a treatment of pruritus in non-breastfeeding obstetric patients undergoing a cesarean section and receiving a neuraxial anesthetic with morphine. Table 1 provides a listing of the intervention steps.
Table 1: Intervention Steps

<table>
<thead>
<tr>
<th>Intervention</th>
<th>How to implement</th>
<th>Evaluation: Identify what outcomes will be evaluated</th>
<th>Evaluation: Identify how outcomes will be evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>To educate OB nurses and anesthesia staff about the possible benefits of using ondansetron to decrease the severity of pruritus and in the treatment of established pruritus in obstetric patients receiving neuraxial morphine at Texas Health Presbyterian - WNJ hospital in Sherman, Texas.</td>
<td></td>
<td></td>
<td>An acceptable completed survey questionnaire will have been developed.</td>
</tr>
<tr>
<td>1. Develop a patient survey.</td>
<td>Before the project can be pursued, it must be determined how valuable it would be to decrease pruritus and have an alternative drug for treatment would be.</td>
<td></td>
<td>The opinions will be evaluated to determine if pruritus is an actual problem that needs solving. An acceptable completed survey questionnaire will have been developed.</td>
</tr>
<tr>
<td>2. Develop a survey in order to gather information from OB nurses, CRNAs, and anesthesiologists.</td>
<td>Information will be gathered regarding perceptions of pruritus as a problem in the OB patient population.</td>
<td></td>
<td>The survey will include a convenience sample of patient participants during the two week period.</td>
</tr>
<tr>
<td>3. Distribute survey to current obstetric patients and tabulate results.</td>
<td>Over a two week period, the author will ask obstetric patients to complete a survey. The survey will measure patient opinions regarding any pruritus experienced, including the severity and the amount of dissatisfaction it caused.</td>
<td></td>
<td>The survey will include a convenience sample of obstetric and anesthesia staff participants during the two week period.</td>
</tr>
<tr>
<td>4. Distribute survey to obstetric nurses and anesthesia staff and tabulate results.</td>
<td>Over a two week period, the author will ask obstetric nurses and anesthesia staff to complete a survey. The survey will measure staff opinions regarding pruritus and if they know ondansetron is a possible treatment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Compilation of survey results.</td>
<td>Compile data of the patient survey. Compile data of the obstetric nurses and anesthesia staff survey.</td>
<td></td>
<td>The data compiled will be evaluated to determine the importance of pruritus to patients, obstetric nurses, and anesthesia staff.</td>
</tr>
<tr>
<td>6. Educate the staff about pruritus.</td>
<td>Obstetric nurses and anesthesia staff are informed about the results of the surveys and are informed regarding the use of ondansetron to decrease the severity of pruritus as well as its usefulness in the treatment of established pruritus. They are given a brief educational presentation and pamphlet.</td>
<td></td>
<td>Staff will be informally interviewed to determine if educational presentation and pamphlet was informative.</td>
</tr>
<tr>
<td>7. Determine accepted need for alternative treatment.</td>
<td>Anesthesia staff feels it would be beneficial to add ondansetron as a treatment option in their post-operative orders.</td>
<td></td>
<td>Staff will be informally interviewed to determine if ondansetron should be included in post-operative orders.</td>
</tr>
</tbody>
</table>
PART FOUR

Implementation

Implementing the intervention first required the creation of a needs survey (Appendix B) for a convenience sampling of the patient population to determine if they considered pruritus a problem and if they wanted additional options to be available. This survey was distributed by the author over a two week period to those patients meeting the criteria of having a cesarean section and receiving a neuraxial anesthetic with morphine. Secondly, an additional survey was produced to evaluate the viewpoints of the obstetric nursing staff, nurse anesthetists, and anesthesiologists regarding pruritus (Appendix C). This survey was distributed by the author to a convenience sample of 29 obstetric nurses, nurse anesthetists, and anesthesiologists at Texas Health Presbyterian – WNJ over a two week period.

Location of implementation

The implementation of the intervention occurred in the obstetric department at Texas Health Presbyterian - WNJ hospital in Sherman, Texas. Interdisciplinary collaboration occurred between OB nurses, physicians and CRNAs.

Guiding Framework

The model chosen for the framework for the implementation of the intervention is Rosswurm-Larrabee’s Model for Change to Evidence Based Practice.¹⁶ This model was chosen based on its comprehensive six stage process that incorporates best evidence as a priority component of the model. The six stages are as follows: (Stage 1) - assess the need for change; (Stage 2) - link the problem with standardized interventions and outcomes; (Stage 3) - synthesize the evidence; (Stage 4) - design a practice change; (Stage 5) - implement and evaluate the
change; and (Stage 6) - integrate and maintain. Figure 1 below is a graphic of the Rosswurm-Larrabee Model.

Figure 1: Rosswurm-Larrabee Model

The following describes the process for implementation under the framework of the Rosswurm-Larrabee Model.

**Stage 1 - Assess Need for Change in Practice**

As stated previously, 60% to 100% of pregnant women receiving a neuraxial block experience opioid induced pruritus.\(^5\) Attenuating the severity of pruritus could increase patient satisfaction levels.

**Stage 2 - Link Problem Interventions With Outcomes**

Ondansetron is currently used in the clinical setting as a medication for nausea and vomiting. The 5-HT\(_3\) antagonist has been identified as an antipruritic agent and,
therefore, ondansetron has the potential to therapeutically treat neuraxial morphine induced pruritus.

**Stage 3 - Synthesize Best Evidence**

A synthesis of evidence was completed for neuraxial opioid induced pruritus and the use of 5-HT₃ receptor antagonists for prevention and treatment. From the synthesis, it was determined the 5-HT₃ receptor antagonists are effective in reducing the severity of pruritus but not in reducing the incidence of pruritus. Additionally, 5-HT₃ antagonists are effective in treating postoperative pruritus. The goal of the intervention was to increase patient satisfaction by using a 5-HT₃ antagonist to prophylactically reduce the severity of pruritus and to treat established postoperative pruritus.

**Stage 4 - Design Practice Change**

The following was the step by step design used for a change in practice.

*Step 1* – Develop a survey for a convenience sampling of patients with input from anesthesia and nursing personnel (Appendix B).

Pruritus is a very common side effect of neuraxial opioids, and a majority of obstetric patients will experience some degree of pruritus. A survey of current patients would validate the need for alternative treatments for pruritus.

*Step 2* - Develop a survey for a convenience sample of obstetric nurses, anesthesia providers with input from anesthesia and nursing personnel (Appendix C).

A survey of obstetric nurses and anesthesia providers established a baseline measurement regarding the knowledge level of using 5-HT₃ antagonists for pruritus.
**Step 3 - Distribute survey to obstetric patients and tabulate results.**

The author interviewed a convenience sample of 11 obstetric patients on postoperative day one during a two week period. The survey measured patient opinions regarding any pruritus experienced, including the severity and the amount of dissatisfaction it caused.

**Step 4 - Distribute survey to current obstetric nurses and anesthesia providers and tabulate results.**

The author interviewed a convenience sample of 16 obstetric nurses and 13 anesthesia providers during a two week period. The survey measured staff opinions regarding pruritus and if they knew ondansetron was a possible treatment.

**Step 5 - Compilation of survey results.**

The data compiled was evaluated to determine the importance of pruritus to patients, obstetric nurses, and anesthesia staff. The tabulated outcomes of the opinions of the patients and providers are provided in the results section.

**Step 6 - Educate the staff about pruritus.**

A pamphlet (Appendix D) was developed and distributed to the obstetric nurses and anesthesia staff informing them of the results of the surveys. The pamphlet also provided information regarding the use of ondansetron to decrease the severity of pruritus as well as its usefulness in the treatment of established pruritus.

**Step 7 - Determine accepted need for alternative treatment.**

Obstetric nurses and anesthesia staff were informally interviewed to determine if ondansetron would be beneficial to add as part of their treatment plan.
Stage 5 - Implement and Evaluate Change in Practice

It was determined ondansetron would be beneficial to use for prevention and treatment of pruritus. The author developed an educational presentation with pamphlets for the obstetric nurses and anesthesia providers. The presentation suggested the anesthesia providers incorporate ondansetron in their standard practice in order to prophylactically reduce the severity of pruritus. The specific patient population would be non-breastfeeding patients undergoing a cesarean section in which neuraxial morphine is used. Administration of ondansetron would occur immediately after the umbilical cord is clamped during the cesarean section. In addition, the pamphlets suggested a change to the postoperative orders to include ondansetron as an additional option for treatment of postoperative pruritus. Through informal interviews, the author evaluated the likelihood of the anesthesia providers implementing these changes.

Stage 6 - Integrate and Maintain

Educational interviews are to be conducted for all new personnel to help them understand the benefits of using ondansetron. Additionally, periodic interviews will be conducted in the future with obstetric nurses and anesthesia providers to observe if ondansetron is being utilized and if there is a change in patient satisfaction overall.

Results

The outcome of the surveys was compiled by the author. Survey results indicated pruritus was a cause of distress for the patients and they would benefit from a treatment currently not available. In the convenience sampling of 11 patients it was determined that 73% of patients experienced post operative pruritus. This falls into the range of 60-100% as described in the literature. When asked about the severity of pruritus, 63% of patients experiencing pruritus said
they itched a lot with 37% stating the itching lasted more than a day. Of those that itched, 63% would have been willing to take additional medication to prevent the pruritus. It is important to note 25% said their hospital stay would have been better if they did not have the itching. While overall patient satisfaction with the hospital is high, opportunities for improvement exist as demonstrated by the results of the patient surveys.

In the convenience sample of 13 anesthesia providers and 16 obstetric nurses, 76% felt pruritus is indeed a problem in patients who have had neuraxial morphine for cesarean section. Of the anesthesia providers and obstetric nursing staff, 62% felt pruritus was a moderate to large problem. Ninety-seven percent thought the pruritus was caused by morphine. Fifty percent of anesthesia staff and 31% of obstetric nurses felt the anesthesia provider contributed to the cause of pruritus. Regarding the prevention of pruritus, 79% of the staff surveyed stated nothing is administered to prevent pruritus. Fifty-five percent of anesthesia staff and obstetric nurses felt standing orders were unsuccessful in treating pruritus. However, only 38% think alternative treatments should be sought. When asked if they thought ondansetron can be used to reduce the severity or to treat pruritus, 72% stated they did not think so. This provided an opportunity to educate the providers of an alternative treatment for pruritus. The current choice of treatment by providers per the standard protocol was determined to be fairly evenly distributed: 15% used Benadryl 25mg PO, 19% used Benadryl 50mg PO, 42% used Nubain 2mg IV, and 23% used Narcan 0.1mg subcutaneous. When asked if itching decreases satisfaction of the patient’s hospital stay, 48% of the anesthesia staff and obstetric nurses agreed it did. This reinforces an opportunity does exist to increase patient satisfaction.

From the outcome of the surveys, an educational presentation was developed. The presentation informed the obstetric nurses, nurse anesthetists, and anesthesiologists of the
opinions derived from the surveys. A pamphlet (Appendix D) was distributed including information from the literature review, suggestions for making ondansetron a part of their normal anesthetic routine, and a proposal for changes to post operative orders to include ondansetron as an additional treatment of pruritus.
PART FIVE

Evaluation

The processes evaluated included (1) how the anesthesia providers prevent and treat neuraxial morphine induced pruritus in non-breastfeeding obstetric patients undergoing a cesarean section and (2) the need for a change in practice. This was evaluated using the patient, obstetric nursing, and anesthesia provider surveys. The author evaluated the process by determining if there was a perceived problem with pruritus, what the providers thought was the cause of the problem, and if the providers knew about using ondansetron in reducing the severity of pruritus and in treating pruritus.

The outcome evaluated was the perceived need for additional treatment of pruritus by the patients and staff through the surveys. An additional outcome evaluated after the educational presentation and pamphlet distribution was the providers’ accepted need for the inclusion of ondansetron as an alternative treatment in the post operative orders. This was evaluated by informally interviewing the nurse anesthetists.

It was concluded that 76% of the providers thought pruritus was a problem in postoperative cesarean section patients receiving neuraxial morphine but 79% do not administer anything to prevent pruritus. Furthermore, 72% stated in the surveys they did not think ondansetron could be used to treat pruritus. However, after the informal interviews, 100% said they were willing to try using ondansetron in the future.

Implications

Initially, there was resistance from the obstetric unit administration due to interdisciplinary disputes. However, when it was explained to the obstetric staff members the project would potentially reduce a problematic area for patients, everyone agreed to participate.
In addition, the author learned all providers were willing to listen to evidence that was substantiated in the literature if they felt it would make a difference in patient outcomes. After reading the pamphlets distributed, the providers were appreciative to have the information collected in the surveys and stated they would like to use ondansetron in the future to improve patient satisfaction levels.

The author recommends the surveys be repeated biannually to determine if there has been a change in practice and if patient satisfaction levels increase. Furthermore, it is suggested by the author that additional 5-HT₃ antagonists be considered in case one has better efficacy than the others for this specific patient population. Additionally, it would be wise to continue to survey the literature for new research studies evaluating potential pharmacological agents in the prevention and treatment of pruritus.
## APPENDIX A

### TABLE 2: Levels of Evidence

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>George, R., Allen, T., Habib, A.</td>
<td>2009</td>
<td>I</td>
</tr>
<tr>
<td>Bonnet, M., Marret, E., Josserand, J., Mercier, F.</td>
<td>2008</td>
<td>I</td>
</tr>
<tr>
<td>Gulhas, N., Erdil, F., Sagir, O., Gedik, E., Togal, T. Begec, Z.</td>
<td>2007</td>
<td>II</td>
</tr>
<tr>
<td>Siddik-Sayyid, S., Aouad, M., Taha, S., et al.</td>
<td>2007</td>
<td>II</td>
</tr>
<tr>
<td>Sarvela, P., Halonen, P., Soikkeli, A., Kainu, J. Korttila, K.</td>
<td>2006</td>
<td>II</td>
</tr>
<tr>
<td>Pirat, A., Tuncay, S., Torgay, A., Candan, S., Arslan, G.</td>
<td>2005</td>
<td>II</td>
</tr>
<tr>
<td>Korhonen, A., Valanne, J., Jokela, R., Ravaska, P., Korttila, K.</td>
<td>2003</td>
<td>II</td>
</tr>
<tr>
<td>Yazigi, A., Chalhoub, V., Madi-Jebara, S., Haddad, F., Hayek, G.</td>
<td>2002</td>
<td>II</td>
</tr>
<tr>
<td>Charuluxanananan, S., Somboonviboon, W., Kyokong, O.</td>
<td>2000</td>
<td>II</td>
</tr>
<tr>
<td>Beilin, Y., Bernstein, H., Zucker-Pinchoff, B., Zahn, J. Zenzen,</td>
<td>1998</td>
<td>II</td>
</tr>
<tr>
<td>Borgeat, A., Stirnemann, H.</td>
<td>1999</td>
<td>II</td>
</tr>
<tr>
<td>Kyriakides, K., Hussain, S., Hobbs, G.</td>
<td>1999</td>
<td>II</td>
</tr>
<tr>
<td>Toomey, M., Biddle, C.</td>
<td>2006</td>
<td>VI</td>
</tr>
<tr>
<td>Krajnik, M. Zylicz, Z.</td>
<td>2001</td>
<td>VII</td>
</tr>
<tr>
<td>Ganesh, A., Maxwell, L.</td>
<td>2007</td>
<td>VII</td>
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<tr>
<td>Szarvas, S., Harmon, D., Murphy, D.</td>
<td>2003</td>
<td>VII</td>
</tr>
<tr>
<td>DeBalli, P., Breen T.</td>
<td>2003</td>
<td>VII</td>
</tr>
<tr>
<td>Rosswurm, M., Larrabee, J.</td>
<td>1999</td>
<td>VII</td>
</tr>
<tr>
<td>Wilde, M., Markham, A.</td>
<td>1996</td>
<td>VII</td>
</tr>
</tbody>
</table>
APPENDIX B

Patient Questionnaire

Your participation is completely voluntary and anonymous. By completing this form, you’re consenting to the use of the compiled data for educational purposes.

1. Did you have any itching after your baby was born?
   - No, thanks for your time.
   - Yes, please continue the survey.

2. Where did you itch? Check all that apply.

   - Nose
   - Mouth
   - Cheeks
   - Chin
   - Eye area
   - Chest
   - Arms
   - Legs
   - Back
   - Other ________________________

3. Was this an itch you had before coming to the hospital?
   - Yes
   - No

4. How much would you say it itched?
   - Very little
   - Some
   - A lot

5. Did you ask for any medicine for the itching?
   - No, it wasn’t that bad
   - I thought about asking but didn’t
   - Yes, it bothered me

6. How long did the itching last?
   - A few minutes
   - A few hours
   - More than a day

7. Did the itching make the birth of your child less enjoyable?
   - Not at all
   - A little
   - Very much

8. Would you have been willing to take a medication that could have kept you from itching?
   - No, it wasn’t that bad
   - Yes, I would have been interested

9. Do you feel that your hospital stay would have been better if you did not have the itching?
   - No, it wasn’t that bad
   - Yes, I would have enjoyed it more

Thank you!
APPENDIX C

Obstetric Nurse & Anesthesia Questionnaire

Your participation is completely voluntary and anonymous. By completing this form, you’re consenting to the use of the compiled data for educational purposes.

1. Do you feel itching is a problem in patients who have had spinals for cesarean sections?
   - Yes
   - No
   - Not sure

2. How significant of a problem is the itching?
   - Big problem
   - Moderate problem
   - Small problem
   - No problem at all

3. Why do you think the patient is itching?
   - From having the procedure
   - From the morphine in the spinal dose administered
   - From the local anesthetic in the spinal dose administered
   - Other, please explain ______________________

4. Do the actions of a particular provider contribute to the development of itching? Select all that apply.
   - the surgeon
   - the anesthesia provider
   - the nurse
   - no one

5. Do you administer any medications to prophylactically prevent itching or to reduce the severity before itching occurs?
   - Yes
   - No

6. Do you feel standing orders are successful in treating itching for patients?
   - Yes
   - No
   - Somewhat

7. Can zofran be used to prophylactically reduce the severity of itching and/or to treat itching once it occurs after spinal anesthetic administration?
   - Yes
   - No

8. What is your preferred medication to treat itching?
   - Benadryl 25mg PO
   - Benadryl 50mg PO
   - Nubain 2mg IV
   - Narcan 0.1mg subcutaneous
   - Other, please explain ______________________________________________________

9. Do you think alternative treatments should be sought?
   - Yes
   - No
   - I don’t know

10. Do you feel itching decreases the satisfaction of the patient’s hospital stay?
    - Yes
    - No
    - I don’t know
Use of Ondansetron for Pruritus Associated with Neuraxial Opioids

Background

The incidence of post operative pruritus for patients receiving neuraxial opioids is greater than 60%. It is likely the high incidence contributes to a decreased patient satisfaction level. The intention of this project was to survey patients to see if post operative pruritus existed and to review current standards of practice at Texas Health Presbyterian – WNJ hospital. It was determined from a convenience sample that 73% of patients over a 2 week period exhibited post operative pruritus.

Synthesis of literature

It is known that pruritus has been linked to the serotonin receptor. Opioids act on the 5-HT₃ receptors located centrally on the dorsal horn of the spinal cord. Serotonin antagonists may not prophylactically reduce the incidence but may reduce the need for treatment and the overall severity of pruritus. Therefore, 5-HT₃ antagonists may provide the most effective prevention and treatment. However, it does not work as well with lipophilic opioids (Fentanyl) as it does with morphine. It is not known why ondansetron is effective in treatment once the opioids have reached the receptors and triggered the pruritus. Ondansetron has shown to be more successful in treating versus preventing pruritus.

Investigation

A survey was created for a convenience sampling of the patient population to determine if they considered pruritus a problem and if they wanted additional options to be available. This survey was distributed by the author over a two week period to those patients meeting the criteria of having a cesarean section and receiving a neuraxial anesthetic with morphine at Texas Health Presbyterian – WNJ.
Secondly, an additional survey was produced that evaluated the viewpoints of the obstetric nursing staff, nurse anesthetists, and anesthesiologists regarding pruritus. This survey was distributed by the author to a convenience sample of obstetric nurses, nurse anesthetists, and anesthesiologists at Texas Health Presbyterian – WNJ over a two week period.

**Patient Survey Results**

- 73% of patients had post operative pruritus.
- 63% of patients said they itched a lot.
- 37% of patients said the itching lasted more than a day.
- 63% of patients would have been willing to take additional medication to prevent itching.
- 25% said their hospital stay would have been better if they would not have had the itching.

**OB Nurses and Anesthesia Survey Results**

- 76% of providers felt pruritus is indeed a problem in patients who have had neuraxial morphine for cesarean section.
- 62% felt pruritus was a moderate to large problem.
- 97% thought the pruritus was caused by morphine.
- 50% of anesthesia staff felt the anesthesia provider contributed to the cause of pruritus while only 31% of the obstetric nurses thought this.
- When asked about prevention of pruritus, 79% stated they do not administer anything to prophylactically prevent pruritus.
- 55% of providers felt standing orders were unsuccessful in treating pruritus, however only 38% think alternative treatments should be sought.
- 72% of providers stated they did not think Zofran could be used for pruritus.
- The current choice of treatment by providers per the standard protocol is fairly evenly distributed: 15% use Benadryl 25mg PO, 19% use Benadryl 50mg PO, 42% use Nubain 2mg IV, and 23% use Narcan 0.1mg subcutaneous.
- 48% of providers thought itching decreased patient satisfaction.

**Recommendations**

Opportunities exist for increasing obstetric patient satisfaction levels. The patient survey revealed 25% of respondents stated their hospital stay would have been even better if they would not have experienced itching.

The overall severity of itching can be reduced if ondansetron is incorporated into practice and given as a routine prophylactic administration. In particular, administration would be to non-breastfeeding patients undergoing a cesarean section and receiving a neuraxial anesthetic with morphine. Administration would occur immediately after the umbilical cord is clamped.

Ondansetron may be a beneficial addition to the standard post operative treatment protocol used as it has been shown to decrease pruritus by 70% versus placebo.  

**References**

Mr. Larry Shock

Dear Mr. Shock:

RE: Use of ondansetron for the treatment of pruritus associated with neuraxial opioids

The proposed study has been reviewed by the TCU Nursing Institutional Review Board (IRB) and was determined to meet the criteria for an expedited review.

The study is approved for one year from the above date. Another review by the TCU Nursing IRB is required if your study changes in any way and the TCU Nursing IRB must be notified immediately with regard to any adverse events.

If you have any question please do not hesitate in contacting the TCU Nursing IRB.

Sincerely,

Terri S. Jones, DNP, CRNA
TCU Nursing IRB- Chair
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