The Role of Communication in the Management of Postoperative Pain

Daniel Sugai, BA, F. Don Parsa, MD, FACS
University of Hawaii John A. Burns School of Medicine
Department of Surgery, Division of Plastic Surgery

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Disclaimer

• The authors have no financial interest in the medications mentioned in this presentation.
Introduction

• “The average practitioner will conduct 120,000-160,000 interviews in the course of a 40-year career…”
  • Mack Lipkin MD, 1995

Introduction

• Communication in medicine encompasses
• 1. Gathering information in order to determine an accurate diagnosis
• 2. Counseling: give therapeutic instructions and patient education
• 3. Establishing caring relationships with patients.
• This is the recipe for achieving positive therapeutic results/outcomes.
Introduction

From my first year of medical school, we published a review article on endorphin physiology.

With this understanding of endorphins, we designed this project in order to find more ways in limiting the use of narcotics in postoperative management.

Narcotics in the Media

Understanding Endorphins and Their Importance in Pain Management

- From my first year of medical school, we published a review article on endorphin physiology.
- With this understanding of endorphins, we designed this project in order to find more ways in limiting the use of narcotics in postoperative management.

Narcotics in the Media

Feds aim to target...
Recent studies have shown that prolonged administration of exogenous opiates inhibits the biosynthesis of endogenous opioid peptides. 
° POMC expression is down-regulated in the hypothalamus
° Endocytosis of mu receptors
Materials and Methods

- Between January 2008 and October 2011, patients undergoing elective outpatient aesthetic procedures were asked to volunteer for this study. A total of 135 patients qualified for the study.

- No opioids, including morphine, meperidine, or sublimase, were administered during the procedure.

Materials and Methods: The Experimental Group

- The experimental group consisted of 68 participants who were educated about the importance of "endorphins" or "natural narcotics" (these two words were used repeatedly throughout the session for better understanding).

- Not only were the patients also educated on the side effects of opioid narcotics (Percocet, Vicodin) including nausea and vomiting; the patients were also taught the negative effects of "synthetic narcotics" or "fake narcotics" (two words also repeated for better understanding) have on the body’s endorphins.

Materials and Methods: The Experimental Group

- This experimental group underwent two educational sessions led by the surgeon, each lasting a minimum of 15 to 30 minutes: one session was held two weeks before the surgical procedure, and the second session was done on the same day of the procedure.

- These sessions included both oral and written forms of communication where the patient underwent a 30 minute preoperative patient education session as well as receiving a handout re-emphasizing the main points about endorphins.
Materials and Methods: Pre-Op Regimen for Experimental Group

- During the pre-operative session, a visual aid/schematic was used to illustrate the ligand-receptor nature between the mu receptor and its ligands: endorphins or exogenous opioids.
- In addition the surgeon gesticulated with one hand cupped to simulate the brain receptors and the other hand representing the endorphin ligand.
- The surgeon also emphasized that synthetic narcotics such as Vicodin, Percocet, etc. block these receptors and this has a dual effect of blocking the action of the natural narcotics as well as diminishing their production.

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Materials and Methods: Patient Education

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Once patient education is provided, patients are asked to choose whether or not they wish to take part in the group that receives Vicodin for possible use in case Tylenol is not adequate.

Patients were also asked if they wanted preoperative treatment consisting of 600mg of gabapentin and 400mg of celecoxib 30-60 minutes before surgery.

The Experimental Group was divided into three groups:

- Group A: Declined Vicodin and Declined G+C
- Group B: Declined Vicodin but Accepted G+C
- Group C: Requested Vicodin prescription
Materials and Methods: The Control Group

- The control group consisted of 67 patients who also received 600mg of gabapentin and 400mg of celecoxib 30-60 minutes before surgery + 500mg of cephalexin, but **DID NOT** receive any pre-operative oral or written patient education regarding endorphin physiology. Patients were handed prescriptions for the above medication and Vicodin.

Materials and Methods: Both Groups

- All patients had access to acetaminophen (1000 mg every 6 hours as needed) postoperatively.

Post-Op Pain Reporting

- Beginning on the day of surgery and ending on the fifth postoperative day, patients who required analgesic medication were asked to record the date, time, type of medication (Tylenol or Vicodin), and the intensity of their pain on a provided form.

- Pain intensity was quantified by the following scale:

<table>
<thead>
<tr>
<th>Intensity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Nil</td>
</tr>
<tr>
<td>1</td>
<td>Mild pain</td>
</tr>
<tr>
<td>2</td>
<td>Discomforting (weakness, nauseating, grueling, numbing)</td>
</tr>
<tr>
<td>3</td>
<td>Disagreeable (nauseating, growing)</td>
</tr>
<tr>
<td>4</td>
<td>Intense (dreadful, horrible, vicious, cramping)</td>
</tr>
<tr>
<td>5</td>
<td>Excruciating (unbearable, torturing, crushing, tearing)</td>
</tr>
</tbody>
</table>
Results

- Total number of patients in Experimental Group: 68
- Average age 39.7 years.
- **62 patients** or 91% declined taking home a prescription of Vicodin at the preoperative session of 2 weeks prior to surgery.
- 6 patients (9%) requested a Vicodin prescription.

Results

- The 62 patients were given the choice of declining to take celebrex+gabapentin preoperatively.
- 43 patients (69%) out of 62 volunteered to not take preoperative celebrex+gabapentin.

Results: Post-Op Pain Reporting in Group A

<table>
<thead>
<tr>
<th>Post-Op Pain Scores: No Gabapentin/Celecoxib</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n=43</td>
<td></td>
</tr>
<tr>
<td>Average Age</td>
<td>46.8 years</td>
</tr>
<tr>
<td>Mean Pain Score for the First 5 Days Post-Op</td>
<td>2.59</td>
</tr>
<tr>
<td>Mild Pain (1.33 average score)</td>
<td>9 (21%)</td>
</tr>
<tr>
<td>Moderate Pain (2.31 average score)</td>
<td>29 (67%)</td>
</tr>
<tr>
<td>Intense Pain (4.14 average score)</td>
<td>5 (11%)</td>
</tr>
<tr>
<td># of Patients who Requested Narcotics Postop</td>
<td>0 (0%)</td>
</tr>
<tr>
<td># with Postop Nausea/Vomiting</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
Results: Post-Op Pain Reporting in Group B

<table>
<thead>
<tr>
<th>Post-Op Pain Scores: Accepted Gabapentin+Celecoxib</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=19</td>
</tr>
<tr>
<td>Average Age</td>
</tr>
<tr>
<td>Mean Pain Score for First 5 Days Post-Op</td>
</tr>
<tr>
<td>Mild Pain (0.88 average score)</td>
</tr>
<tr>
<td>Moderate Pain (1.68 average score)</td>
</tr>
<tr>
<td>Intense Pain (3.29 average score)</td>
</tr>
<tr>
<td># of Patients who Requested Narcotics Preoperatively</td>
</tr>
<tr>
<td># with Postop Nausea/Vomiting</td>
</tr>
</tbody>
</table>

Results: Postop Pain Scores in Group C

- Of the 2 who filled their prescription, one patient utilized 9 tablets and the other patient took 8 tablets during the first 5 days after surgery.
- 1 patient who used 9 Vicodin tablets: 4.43 (intense pain).
- 1 patient who used 8 tablets: 4.23 (intense pain).

Results: Control Group

- 67/67 (100%) filled their Vicodin (20 tablets) prescriptions along with G+C and cephalexin.
- Group A: 54 patients did not request a refill of Vicodin
- Group B: 13 asked for a refill of Vicodin
Results: Control Group A

<table>
<thead>
<tr>
<th>Post-Op Pain Scores</th>
<th>Did not ask for a refill of Vicodin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=53 (81%)</td>
</tr>
<tr>
<td>Average Age</td>
<td>34.2</td>
</tr>
<tr>
<td>Mean Pain Score for First 5 Days Post-Op</td>
<td>3.17</td>
</tr>
<tr>
<td>Mild Pain (1.41 average score)</td>
<td>13 (24%)</td>
</tr>
<tr>
<td>Moderate Pain (2.76 average score)</td>
<td>18 (34%)</td>
</tr>
<tr>
<td>Intense Pain (4.55 average score)</td>
<td>22 (42%)</td>
</tr>
<tr>
<td>Average Vicodin use in the first 5 days postop</td>
<td>9.8 tablets</td>
</tr>
<tr>
<td># with Postop Nausea/Vomiting</td>
<td>14 (21%)</td>
</tr>
</tbody>
</table>

Post-Op Pain Scores: Did not ask for a refill of Vicodin
- Average Age 34.2
- Mean Pain Score for First 5 Days Post-Op 3.17
- Mild Pain (1.41 average score) 13 (24%)
- Moderate Pain (2.76 average score) 18 (34%)
- Intense Pain (4.55 average score) 22 (42%)
- Average Vicodin use in the first 5 days postop 9.8 tablets
- # with Postop Nausea/Vomiting 14 (21%)

Results: Control Group B

| Post-Op Pain Scores: Asked for refills of Vicodin |
|---------------------|-----------------------------------|
|                     | n=13 (19%)                        |
| Average Age         | 26.3                              |
| Mean Pain Score for First 5 Days Post-Op | 3.1 |

Post-Op Pain Scores: Asked for refills of Vicodin
- Average Age 26.3
- Mean Pain Score for First 5 Days Post-Op 3.1

- 7 patients used all Vicodin tablets during the first 5 days postop and requested two more refills
- 3 patients requested a third refill of Vicodin

Discussion: History of Endorphins

- In 1975, Hans Kosterlitz and Robert Hughes in Scotland discovered **pain-modulating endogenous peptides**:
  - Enkephalins (5 amino acids long)
  - Endorphins (16-31 amino acids long)
- These peptides were found to act through opioid receptor binding and thus create similar effects as morphine.
Discussion: Functions of Endorphins

• Analgesia: acute injuries (soldiers injured in war).

• In premenstrual dysphoric disorder, a study found that patients with the disorder had lower levels of plasma beta-endorphins which correlated to lower pain thresholds and increased pain sensitivity.

• Behavior and mood: “Happiness peptides” during exercise.

• Stanley et al. has investigated the CSF levels of endorphins in those with self-injurious behavior and have found that those who were depressed and suffered from feelings of hopelessness had significantly lower levels of CSF endorphins.

Discussion: Our study

• 91% declined their Vicodin prescription after patient education on pain physiology.

• Of the 91%, the average pain scores were lower than those who filled and utilized their Vicodin prescriptions.

• Of the 91%, no subjects required supplemental narcotics in addition to Tylenol.

• Those who requested Vicodin after patient education, ended up having MORE pain than those who did not request Vicodin.

Discussion

• Studies have shown that visual aid use is an effective strategy to educate patients of different cultural and educational backgrounds.

• In addition to the benefit of educating the patient on endorphins, patients perhaps also experience a sense of control in their care opposed to the historical paradigm of physician paternalism.

• Numerous studies have shown that when patients are adequately informed about their medical conditions and take an active part in decision-making, improved outcomes are more likely. In regards to pain tolerance, a correlation has been found between a sense of control in the patient and increased pain tolerance.
Discussion: The Placebo Effect

- Reports estimate that between 25% and 60% of patients report improvement with placebo treatment across various clinical conditions, such as pain, asthma, cardiovascular diseases, and depression.
- Proposed mediators involved: endogenous opioids, CCK, and dopamine.
- Meta-analysis of 40 years of research: the expectation of analgesia does indeed affect self-report of pain where a “substance administered in full view of the individual, with the suggestion that the substance would alleviate pain, induced a significant reduction in the experience of pain, whether pain was experimentally induced or created by surgical experience.”
- The data also support the notion that placebo analgesia is mediated, in part, by an endogenous opioid-related mechanism. That is, when naloxone was administered by hidden injection, it was found to augment pain response in those receiving placebo analgesia, but had no effect in those individuals who had no expectation of pain reduction (i.e., were not specifically told that they were receiving a painkiller).

PMDD: In the follicular phase, one group given long-acting opioid antagonist (nalmefene), the other group received a placebo→ symptoms improved in placebo group, and no improvements were seen in the nalmefene group.


The Power of Perceived Control

- Two components of experiencing pain: 1) the initial sensation, and 2) reactive pain.
- Reactive pain is largely influenced by anxiety.
- By suppressing anxiety via effective communication, patient education and empowering the patient, perceived pain is not as severe.
The Power of Patient Education and Effective Communication

- Meta-analysis of studies on how pre-operative patient education can improve postoperative outcomes: decrease hospital stay, less blood loss, reduced time to regaining bowel function

Time Spent with Patients

- According to a recent survey:
  - Internal Medicine: ~50% of internists spend 13-20 minutes per patient; 27% spent more than 20 minutes
  - Orthopaedic Surgery: Majority spend 9-16 minutes with each patient; <10% spend more than 20 minutes
  - Ophthalmology: Majority spend less than 13 minutes; 7% spend more than 20 minutes
    - Medscape Compensation Report: 2011 Results

The Power of Communication

- Experimental Group (with Patient Education): 91% declined Vicodin prescription
- Control Group (without Patient Education): 100% filled their Vicodin prescription along with G+C and Cephalexin.
Conclusion

- Opioid narcotics carry multiple side effects which complicate postoperative recovery including ileus, anorexia, nausea and vomiting, sedation, respiratory depression, and addiction.
- Given that endorphins are involved in many aspects of our wellbeing including pain sensitivity and psychological wellbeing, it is crucial to educate patients undergoing surgery on the importance of endorphins and eliminating the need for narcotics in postoperative pain management.
- This study illustrated the power of communication and how influential a physician can be in the mental and physical management of the surgical patient.

"How past and present environments may shape circuits that connect complex emotions (like belief and expectation) with the pathways that release dopamine, endorphins, and enkephalins, or autonomic mediators is not known. But this dynamic biology emphasizes that we are not prisoners of our DNA."

- Dr. Jerome Groopman, *The Anatomy of Hope*

References
