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Post-Operative Nausea and Vomiting
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Introduction

- Post-operative nausea and vomiting (PONV) is any nausea or vomiting that follows immediately after and up to 48 hours after surgery (Pierre & Whelan, 2012).
- PONV is one of the biggest and most common complaints and one out of three surgical patients will experience it (Pierre & Whelan, 2012).
- It is debilitating and can cause serious consequences to the patient and to the hospital.
- Risk factors for PONV: female gender, non-smoker, perioperative opioid use, history of PONV or motion sickness, and certain surgeries such as gynecological, laparoscopic, ophthalmological, ontological, and ear-nose-throat (Pierre & Whelan, 2012).
- To decrease the incidence, a multimodal approach is used perioperatively.
- Different anti-emetics medications are used in combination to work on the multiple receptors that affect the vomiting center.

Pathophysiology

- PONV is complex and not well understood.
- The vomiting center is stimulated by the glossopharyngeal, hypoglossal, and vagal nerves.
- The chemoafferent trigger zone (CRTZ) and the nucleus tractus solitaries (NTS) are located in the brain stem and send signals to the vomiting center (Pierre et al., 2012).
- Vagal afferent nerves, vestibular system, and the limbic system can stimulate the vomiting center (Chatterjee et al., 2011).
- There are several receptors that will stimulate nausea and vomiting.
- m1 receptors signal the vomiting center to cause nausea and vomiting.
- Circulating substances in the blood, such as toxins, activates D1 and SHT3 in the CRZ which sends signals to the vomiting center (Hasudungan, 2013).
- Motion sickness activates the vestibulocochlear nerve, stimulating H1 and m1 receptors, which then stimulates the CRTZ, and then the vomiting center (Hasudungan, 2013).
- The higher center of the brain is activated by painful stimuli, rancid smells, and corrupt scenes which activate the vomiting center (Hasudungan, 2013).
- Vagal sensory nerve fibers in the stomach are stimulated from certain foods or toxins that irritate the gastric lining which then stimulates the vomiting center (Hasudungan, 2013).
- The vomiting center can be triggered by opioids, volatile anesthetics, drug reactions, anticholinergics, nitrous oxide, dehydration, anxiety, pain, and motion.
- Risk factors for PONV:
  - Female gender
  - Non-smoker
  - Perioperative opioid use
  - History of PONV or motion sickness
  - Certain surgeries such as gynecological, laparoscopic, ophthalmological, ontological, and ear-nose-throat
  - Postoperative nausea and vomiting (PONV)

Pathophysiological Significance

- Anesthesia providers need to be aware of the risk factors, pathophysiology, high risk medications, and preventative strategies for PONV.
- By knowing the pathophysiology of PONV and getting a detailed history from the patient, the anesthesia provider can determine the appropriate multimodal approach for each individual patient, and decrease the chance of the patient getting PONV.

Signs and Symptoms

- PONV will occur immediately after and up to 48 hours post-surgery.
- Unealessness of the stomach, gagging, reflux of gastric contents, involuntary and forced contraction of the stomach resulting in expulsion of gastric contents.
- Not able to hold food or fluids down without gagging or vomiting.
- Fatigue, dehydration, headache, lightheadedness, diziness, pain, and dehiscence of the surgical incision.

Implications for Nursing

- PONV is very serious because it can be debilitating for the patient and cause complications.
- Regional anesthesia and NSAIDs should be used to decrease the use of opioids (Chatterjee et al., 2011).
- N2O, inhalational agents, Emtidometate, and Ketamine should be avoided because they are emetogenic agents.
- Anticholinesterases should be used correctly based on the need for neuromuscular blockade reversal due to their ability to cause PONV (Chatterjee et al., 2011).
- Total intravenous anesthesia (TIVA) is another strategy to prevent PONV.
- Use different anti-emetics that work on all five receptors: SHT3, D2, H1, N1K1, m1.
- The most common medications used are Zofran, Dexamethasone, Promethazine, Scopolamine, Metoclopramide, and Emend.
- Consider using an anxiolytic and aggressive hydration at 25mL/kg (Chatterjee et al., 2011).

Conclusion

- PONV prevention is essential for safe patient care.
- The CRNA should have a planned multimodal approach, specified for each patient.
- One third of patients without prophylaxis will develop PONV (Chatterjee et al., 2011).
- Consequences of PONV include delayed discharge from PACU, unanticipated hospital stays, pulmonary aspiration, patient discomfort, and dehiscence of surgical incision (Chatterjee et al., 2011).
- Anesthesia provides can significantly improve the quality of patient care and satisfaction if they are able to identify high-risk patients and know the appropriate prophylactic treatment (Chatterjee et al., 2011).

References


Retrieved May 24, 2016, from https://www.youtube.com/watch?v=LTjbp5xdwf4