Post-Operative Nausea and Vomiting in Adults

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INTRODUCTION

Post-operative nausea and vomiting (PONV) is a common concern for patients, occurring in 50 to 70% of patients. PONV is estimated to affect 20-40% of patients undergoing general anesthesia, and up to 50% of high-risk patients (Cao, 2017). PONV is a common surgical complication and is a leading cause of nausea and vomiting in ambulatory care patients. Patients report discomfort, and dissatisfaction with PONV and report that the “avoidance of PONV is a greater concern than the avoidance of post operative pain” (Gan et al., 2001). PONV can increase time spent in the recovery room, expanded nursing care, and can increase hospitalization costs (Cao et al., 2013).

In a survey of healthcare climate, the phrase “patient satisfaction” is a hot buzzword. Patients are asked to fill out surveys about their healthcare experience and rate their satisfaction and it is directly linked to reimbursement. Since the risk for PONV can be quite high, it can affect many people satisfaction scores. Appropriately screening and intervention can prevent PONV and increase patient satisfaction scores. As an anesthesiologist, I am part of a pre-operative patient assessment team. We assess patients for PONV and ask about a history of previous nausea or vomiting. Typically, I would ask about this in my short time in the operating room, I have seen variations in the management including no questions and inclusion of PONV as an advanced practice provider. I have the opportunity to select patients for PONV prophylaxis. I chose to complete this project further to learn more about a complex and not well understood patient group, to increase my knowledge base and select appropriate medication therapy for the patient and ultimately improve patient care by following evidence-based practice.

PATHOPHYSIOLOGY AND SIGNIFICANCE

- PONV is a complex issue and involves many different receptors and pathways in the body.
- Nausea is described as “an unpleasant sensation referred to a desire to vomit not associated with an expulsive muscular movement” (Shaikh et al., 2016).
- Vomiting is described as “a forcible expulsion of even a small amount of upper gastrointestinal contents through the mouth” (Shaikh et al., 2016).
- Nausea and vomiting are responses to certain stimuli from vestibular, olfactory, visual, and psychomotor sources (Cruthirds, 2013).
- Triggers for PONV occur prospectively (fear, anxiety), intravenously (medications, type of surgery), and postoperatively (pain).
- The five major pathways involved with the development of PONV are:
  - Chemoreceptor trigger zone (CTZ)
  - Vagal musculary pathway in gastrointestinal system
  - Neuroaxial pathways from vestibular system
  - Multiple pathways
- Stimulation of any of the afferent pathways can activate vomiting via mechanisms involving histaminergic, dopaminergic, or serotonergic receptors in the CTZ (Cruthirds, 2013).
- The trigger zone is triggered by neuropeptides including dopamine, serotonin, histamine, acetylcholine, and substance P (Cruthirds, 2016).
- Serotoninergic receptors (5HT3, 5HT2A, 5HT4)
- Histaminergic receptors (H1, H2, H3)
- Dopaminergic receptors (D1, D2, D3, D4)
- Muscarinic receptors
- Neurotransmitters
- Endorphins
- Other: Propranolol, Gabapentin, Ondansetron

RISK FACTORS

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A multimodal approach, combination medications of the 5 drug classes (5HT3 receptor antagonists, corticosteroids, anti-emetics, oxybutynin, and anticholinergics) to block different receptors.

Do not make every patient for PONV because it places them at risk for complications, but identify side effects described since PONV (See all, 2014).

Avoidance or decrease of high risk medications listed below.