

CHARACTERIZATION OF PATIENTS IN THE IMMEDIATE POSTOPERATIVE BY PRESENCE OF NAUSEA AND VOMITING

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ABSTRACT

The postoperative nausea and vomiting are the main complications after anesthetic-surgical procedures, occurring in about 20 to 30% of patients, helping to delay the return to normal function, the rise in hospital costs and lower degree of patient satisfaction. The aim of this study was to characterize patients with symptoms of nausea and vomiting in the first 24 hours postoperatively. A descriptive study developed in Surgical Wards and Anesthetic Recovery Unit, Hospital das Clínicas, Faculty of Medicine of Ribeirão Preto, University of São Paulo. Data collection preoperatively was conducted by structured interview and physical examination and data related to the intra and post-operative data were collected through review of medical records. Of the 100 study participants, seven had nausea and vomiting. These symptoms were more common in female subjects, who did not smoke, older than 46 years and classified as obese or overweight. The small number of patients who experienced postoperative nausea and vomiting may be related to prevention of these symptoms postoperatively or no record of nausea and vomiting by professionals.

Keywords: Nausea. Vomiting. Postoperative Nausea and Vomiting. Postoperative Care. Nursing.

INTRODUCTION

The immediate postoperative period is considered critical due to the complex physiological changes that occur with the patient after the surgical procedures. The nurse working in the perioperative period should know the major complications associated with the surgical anesthetic procedure to look out for the real needs of the patient. In this sense, the nursing staff must know their patient, develop a plan of care and implement a proper and safe care in all phases of the surgical experience, minimizing injuries.

Nausea and or vomiting in the postoperative period (PONV) are major complications after anesthesia and surgical procedures, occurring in about 20-30% of patients, making it harder to get back to proper functions, the increased hospital costs and lower degree of patient satisfaction ⁽¹⁾.

There are still the organic potential consequences such as tachycardia, hypertension, discontinuation of oral feeding, dehydration, increased intracranial pressure and eye bleeding wound dehiscence of suture lines, increased chances of pulmonary aspiration, electrolyte disorders and esophageal rupture⁽²⁾.

Nausea is an unpleasant subjective sensation in the epigastrium and oropharynx associated with an urgent need to vomit. The PONV are defined as an episode of nausea or vomiting that occurs within 24 hours after receiving anaesthesia⁽²⁾.

Risk factors for PONV are related to the surgical patient (female, non-smoking, history of PONV, history of nausea associated with motion and age), the surgical anaesthetic procedure (type of surgery, administration of opioids, volatile anaesthetics and nitrous oxide) and postoperative (administration of opioids)⁽²⁻³⁾.

To evaluate the postoperative patient, the nurse

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uses as a base the information obtained during the preoperative period, as well as his knowledge of the type of surgery, and complications of anesthesia during surgery. The identification of risk factors for PONV can support the planning of nursing care in the three phases of the surgical experience as well as aid research related to nursing interventions⁽⁴⁾.

The aim of this study was to characterize patients with symptoms of nausea and vomiting in the first 24 hours after surgery with the intention of subsidizing the identification of nursing diagnosis, nausea after surgical procedures and facilitate the preparation of the plan of care.

METHODOLOGY

This is a quantitative, descriptive study developed in Surgical Wards, Recovery Unit and Anaesthesia Service Medical Records, Hospital das Clínicas, Faculty of Medicine of Ribeirão Preto, University of São Paulo (USP-HCFMRP).

The population was composed of patients in pre and postoperative period of elective gastrointestinal and open gynaecological and video laparoscopic surgeries. Data collection was conducted from November 2009 to May 2010.

We used the following inclusion criteria: age less than 18 years, regardless of gender, undergoing elective gastrointestinal, open gynaecological or video laparoscopic surgeries, be at the first postoperative 24 hours, provide awareness and guidance in relation to time, space and person, being able to answer simple questions such as: What day is it today? Where are you? Are you married? We adopted as exclusion criteria: cancer patients undergoing prior or current chemotherapy.

To obtain the data, we used structured interview, observation, physical examination and search of data records. For this, we built a data collection instrument that assessed sociodemographic data (gender, age, weight, height, education, and employment status) and clinical data related to the pre-, intra-and postoperative periods (vital signs, previous diseases, prenatal diagnosis surgery, hydration, use of catheters, type of anaesthesia, medications and the presence of factors associated with

PONV), which then underwent validation by professional appearance and content experts in the field of surgical nursing and anaesthesiology. The physical examination data, the intra-and postoperative period were collected from records held by all professionals in the medical records of patients.

In order to perform an accurate assessment of anxiety, we applied the Hospital Anxiety and Depression Scale (HADS). The use of this scale was adopted because of anxiety is directly related to the presence of PONV, since it may be associated with the administration of a larger amount of anaesthetic in the intraoperative and postoperative period. It is made up of 14 items, seven for assessment of anxiety (HADS-A) and seven for depression (HADS-D). Each item includes four answers 0-3, totalling a maximum score of 21 points. To identify the presence of anxiety and depression, we used the following scale: no anxiety 0 to 8, with anxiety greater than or equal to 9; without depression 0 to 8, with major depression or equal to 9⁽⁵⁾.

Visits were made to the Surgical Center HCFMRP-USP daily for consultation of the surgical nurse scale. We found a possible participant, the researchers were directed to the Surgical Wards, where the patient was hospitalized, to explain about the importance of research and its objectives and invite him to participate in the study. After agreement with the signing of the consent form, we began with the collection of data from the preoperative period by applying the HADS and by collecting demographic and clinical data in accordance with the instrument adopted. Patients undergoing ambulatory surgery were interviewed on the day of surgery, at the reception of the surgical center.

The information related to anaesthetic-surgical procedure and postoperative period were obtained by the records of the patient's record, considering all the notes taken by the health team. The data collection was also based on the plug anaesthetic and nursing records from the recovery room after anaesthesia, assuming that PONV occur in the first 24 hours.

The body mass index was classified according to the literature⁽⁶⁾ as follows: underweight (less than 18.5 kg / m²), normal weight (18.5 to 24.99 kg / m²), overweight (25 to 29.99 kg / m²) and obese (greater than 30 kg /

m²). The collected data were entered in Excel, transcribed and analysed descriptively in the program Statistical Package for Social Sciences - SPSS, version 20.0 (Copyright IBM Corporation, 2010).

This study was approved by the Ethics in Research Committee HCFMRP-USP under Opinion No 7338/2009.

RESULTS AND DISCUSSION

The study included 100 patients, 19% male and 81% female, aged 18-75 years (mean 42 years) with low education (53%) (Table 1). Most

patients underwent surgery, open gastrointestinal surgery (50%), followed by video gynaecological surgery (27%), open gynaecologic surgery (14%) and video gastrointestinal surgery (9%). Regarding the type of anaesthesia, 84% received general anaesthesia, spinal anaesthesia 14%, 1% epidural and 1% sedation. The majority (82% patients) reported no pain postoperatively. The majority of patients were considered to have "no anxiety" (66%) and "no depression" (81%) by the HAD scale and had the habit of smoking (84%). Two patients had qualifying scores for anxiety and one patient with depression.

Table 1. Sociodemographic characteristics of patients in the immediate postoperative period of elective gastrointestinal and open gynecological or open videolaparoscopic surgeries according to the presence of PONV. Ribeirão Preto, SP, 2010

Study variables	N	(%)
Age Group		
Up to 30 years old	22	(22)
31 to 45 years old	36	(36)
46 to 60 years old	34	(34)
61 or older	8	(8)
Gender		
Male	19	(19)
Female	81	(81)
Education		
Illiterate	2	(2)
Elementary Education	51	(51)
High School	37	(37)
Higher Education	10	(10)

The frequency of PONV among patients was 7%. These complications commit 20% to 30% of patients and this number could increase to 70% in patients with high risk for PONV⁽⁷⁻⁸⁾.

In a retrospective study performed by analysis of medical records of patients undergoing outpatient surgery, it was found that 3.3% had PONV⁽⁹⁾. Perhaps the low incidence found in this study and in the present investigation are related to the retrospective design, in which the researcher is not responsible for the collection and recording of information, and rarely able to identify whether data were recorded in a limited way, partial or incomplete or if the patient had or not a particular problem⁽¹⁰⁾.

Another hypothesis, evidenced during clinical practice, is the lack of records of nausea when not

accompanied by vomiting. These events differ in theory, but in practice occur at the same time, in most cases, making difficult their separation. Nausea by itself is an unpleasant event for the patient and generates dissatisfaction with the health service. The documentation of the information held reliably can help institutions to plan strategies to reduce this complication.

Of a total of seven patients who had PONV, four were women and seven were non-smokers (Table 2). Patients who developed PONV were classified as overweight (three) or obese (four) and three reported having nausea and vomiting with the movement. All patients who had received PONV opioids (Table 2) and antiemetic prophylaxis in the intraoperative period: ranitidine hydrochloride, ondansetron,

dexamethasone and metoclopramide, according to the protocol of the study unit. In relation to

pain, two complained of this symptom and were medicated with opioids.

Table 2 –Risk factors related to the presence of nausea and / or vomiting in the postoperative period (PONV). Ribeirão Preto, SP, 2010.

Risk Factors	Presence of Nausea (n)
Gender	
Female	4
Male	3
Smokes?	
Yes	0
No	7
Type of anesthesia	
Spinal	2
General Anesthesia	5
Motion Sickness	
Yes	3
No	4
Administration of opioids	
Yes	7
No	0

Patients who developed PONV most frequently were between 46 and 58 years (five) and in three nausea and vomiting occurred after greater movement postoperatively.

Of a total of seven patients who had PONV, two received spinal anesthesia and five underwent general anesthesia or intravenous general combined. Most patients (five) required intubation. The minimum duration of anesthesia was 60 minutes and a maximum of 310, with an average of 185 minutes.

Regarding the surgical procedure, patients undergoing open surgery (five) had PONV more frequently than those undergoing surgery for video endoscopic (two).

The most important risk factors indicated in systematic reviews and meta-analyses are: female habit of not smoking, history of PONV, motion sickness, duration of surgical anesthetic procedure, type of surgery and the administration of volatile anesthetics, nitrous oxide and opioids during and after surgery^(7-8,11).

Female gender is one of the most important risk factor for PONV, with an incidence of about 70%, a fact that has motivated researchers to seek effective interventions to prevent and control these symptoms in these patients⁽¹²⁾. Females have a three times greater risk of

developing PONV than men⁽¹³⁾, and corroborated by other studies^(3,11,14). In this study, the increased incidence of PONV in women may be related to gender inequality in the sample (81% women and 19% men). Women before puberty do not have an increased risk of PONV, which suggests an association with hormonal factors⁽¹⁴⁾.

The incidence of nausea was low in children, suffering a gradual increase through adolescence. There is a peak among patients 25-50 years and among those older than 70 years old, there has been a significant drop in rates of PONV⁽¹⁴⁾. Research results showed a higher prevalence of PONV among pediatric patients than in adults⁽¹⁵⁾. The age of 18 years old was considered, in some studies, such as protective of the presence of PONV⁽¹³⁾, while others have not confirmed⁽³⁾. Different authors⁽¹⁶⁾ showed that older individuals tend increased and more likely to have nausea and vomiting after undergoing surgery. A systematic literature review described the female from puberty as a risk factor well established in the literature⁽⁷⁾.

The seven study participants who presented PONV did not smoke. Smoking is an important protective factor for PONV (79.7%)^(3,11). Non-smokers have twice the risk of PONV than

smokers, but the pathophysiological mechanism of the protective effect of smoking is not clear⁽¹⁶⁾. A possible etiology would be one of the chemical components of cigarette has an antiemetic effect. In addition, chronic use of tobacco elevates levels of the liver enzyme cytochrome P450 and the increase of this enzyme induces in smokers the decomposition of the anesthetic agents more rapidly than in non-smokers, resulting in a lower rate of nausea⁽¹⁷⁻¹⁸⁾.

The literature identifies a positive correlation between obesity and the incidence of nausea and vomiting in patients undergoing surgical procedures⁽¹⁹⁾. This correlation has been attributed to the deposition of anesthetic agents on adipose tissue, greater residual gastric volume and high incidence of esophageal reflux, biliary and gastrointestinal diseases in obese individuals. In addition, obese patients have high difficulty ventilation with mask airway and tracheal intubation. This reduction in ventilation contributes to the stimulation of the vomiting center⁽¹⁹⁾. Obesity was not considered a risk factor for PONV two systematic reviews^(7,11), but may be associated with an increased time of surgery, since the surgeon can take more time to be able to access the location to be operated.

A high incidence of nausea and vomiting was observed in general anesthesia, in which a large number of drugs is used in both the induction and the maintenance and awakening of the patient⁽²⁰⁾. The technique of balanced anesthesia is associated with higher incidence compared intravenous anesthesia. A balanced anesthesia includes the use of hypnotic drugs, muscle relaxants, analgesics, opioids, anticholinesterase and others, some of them with important emetogenic potential. Among intravenous anesthetic agents hydrochloride dextroetamina and etomidate are those with greater emetic activity, while it is attributed to propofol antiemetic action. The presence of inhalational anesthetics may be related to a higher incidence of PONV⁽¹¹⁾ because it stimulates the sympathetic nervous system with consequent release of catecholamines and changes in middle ear pressure, stimulating the vestibular system^(14,20).

For each 30 minute addition time of surgery, there is an increased risk of PONV 60% from a

baseline risk of 10%. In the present study, patients with PONV had a variation of the duration of anesthesia 60-310 minutes with a mean of 185 minutes. The literature^(14,16) showed that anesthesia 30 minutes have elapsed, the risk increases from 10% to 16%. The prolonged duration of anesthesia and surgery was described as nausea related to several reasons such as: the experience of the surgeon⁽¹³⁾, prolonged exposure to anesthetic agents emetizantes potentially, increasing the likelihood of pain and increased anesthesia time to eliminate the organism^(3,7).

The emetic action of opioids is due to direct stimulation of the chemoreceptor trigger zone in the area postrema, prolonging gastric emptying, reduced intestinal motility and sensitization of the vestibular system. The area postrema of the brainstem is rich in dopamine receptors, opioid and serotonin receptors, including the 5-HT₃ receptor. The nucleus of the solitary tract is rich in receptors for enkephalin, histamine, norepinephrine and muscarinic cholinergic receptors. These receptors and mediators play an important role in the transmission of impulses emetic for vomiting center. Opioids are highly emetogenic agents used in anesthesia, whether intravenous, subcutaneous or spinal. The fentanyl citrate, sufentanil citrate, alfentanil hydrochloride and produce a significant increase in the incidence of PONV, highlighting mainly tramadol hydrochloride^(13-14,16).

In this research, only the administration of opioids intraoperatively were more prevalent. We believe that the small size of the sample is related to the low number of subjects who received opioids and PONV postoperatively.

The nature of anesthetic-surgical procedure was identified as a risk factor in the literature⁽⁷⁾, but not identified in this study. The procedures identified as risk factors for PONV and its mechanisms of action are: tympanoplasty (vestibular stimulation), ENT (swallowing blood), breast surgery (anxiety and emotional aspects), laparoscopy (peritoneal irritation), abdominal surgery and plastic (vagal stimulation and gastrointestinal tract)⁽⁷⁾.

The history of motion sickness and PONV were considered as risk factors for PONV in systematic reviews^(7,11). It has been hypothesized that these individuals have a reflex

are exacerbated for nausea and vomiting, or even on the vestibular disorders ⁽⁷⁾. In this study, this association was not identified.

The motion sickness is characterized by feelings of nausea when riding in any means of transportation, or moving around the body so unusual, disturbing the vestibular system responsible for balance. Organic disorders such as severe hypotension, headache, hypoxia, raised intracranial pressure are able to stimulate the cortical afferent pathway. Similarly, certain stimuli, such as motion, otitis media, vascular tumors of the maze and are capable of promoting buccal pulses that pass through the auditory nerve to the cerebellum and then to the chemoreceptor trigger zone and finally to the center of vomit ⁽¹⁹⁻²⁰⁾.

The motion of removing the patient from the operating table to bed litter Recovery Center Post-anesthetic and then to bed in the ward, particularly when immobilized for long periods in a given posture can trigger stimulation of the vestibular system contributes to greater induction of vomiting in the immediate postoperative period. Some studies have shown that the vomiting center keeps neuroanatomical connections with the motor pathways and several central nuclei responsible for coordinating the response and visceral efferent motor gag reflex, involving several effectors, including the muscles of the respiratory, gastrointestinal and abdominal ⁽¹⁹⁻²⁰⁾.

Of the patients with PONV, only 28.5% reported pain at the same time they had nausea. Although our data do not allow us to establish a relationship between pain and nausea, it is known that 5-HT₃ receptors are involved in the mechanism of pain, nausea and vomiting, anxiety and depression. The pain by stimulating cortical afferents, reaches the vomiting center, causing it. The emetic stimuli triggered in abdominal viscera (visceral pain) are transmitted via vagal afferents and sympathetic ⁽¹⁹⁻²⁰⁾.

All patients in our sample received antiemetic prophylaxis, mainly through drug ranitidine hydrochloride, ondansetron, dexamethasone and metoclopramide.

Ondansetron hydrochloride is indicated for the control of nausea and vomiting induced by chemotherapy and radiotherapy for prevention and treatment of nausea and vomiting after

surgery. It is a potent antagonist highly selective 5-HT₃ receptors, for inhibits serotonin released by enterochromaffin cells of the stomach. These receptors are located in the endings of afferent fibers that walk the vagus until the area postrema nucleus of the solitary tract, responsible for vomiting. Its mechanism of action in the control of nausea and vomiting is not well known ^(12,16).

Ranitidine hydrochloride is a histamine H₂ receptor antagonist endowed with high selectivity and rapid onset of action. Inhibits both basal and stimulated acid, thus reducing both the volume and acid content ⁽¹²⁾.

Metoclopramide hydrochloride is derived from benzamide and has the main action chemoreceptor trigger zone, where it blocks dopamine receptors and to a lesser extent, serotonin receptor. Increases lower esophageal sphincter tone and gastrointestinal motility, but it raises the gastric-acid secretion. Metoclopramide has been effective in the prevention and treatment of PONV, but can cause feeling of dysphoria, extrapyramidal syndrome and spasmodic torticollis ^(8,12).

Dexamethasone is a corticosteroid that has been shown to be effective in reducing PONV. Its mechanism of action is related to the release of endorphins that elevate mood and stimulate the appetite ⁽⁸⁾, however, operates with greater efficiency and associated with other antiemetics administered before induction of anesthesia ⁽¹²⁾.

This study has limitations related to sample size, considering the protocol used antiemetic prophylaxis during surgery and also the process of data collection, since the manifestations of PONV may not have been recorded in medical records or patients not reported possible manifestations of nausea healthcare team. In future studies indicate the completion of prospective data collection through observation and interview with the patient.

FINAL CONSIDERATIONS

We conclude that nausea and vomiting in the first postoperative 24 hours were manifested mainly by females, with body mass index above 25 kg/m², non-smokers, undergoing general anesthesia lasting more than 60 minutes and who used opioids in the intraoperative period.

Patients with this profile should receive greater attention of medical and nursing staff in order to prevent and / or control PONV.

We suggest the creation of protocols for the documentation of nausea and vomiting after

surgery, based on reliable measurement instruments, as the study pointed to possible flaws in the recording of nausea and vomiting, putting further doubts about the nursing notes.

CARACTERIZAÇÃO DE PACIENTES NO PÓS-OPERATÓRIO IMEDIATO SEGUNDO A PRESENÇA DE NÁUSEAS E VÔMITOS

RESUMO

As náuseas e ou vômitos no pós-operatório são as principais complicações após procedimentos anestésico-cirúrgicos, ocorrendo em cerca de 20 a 30% dos pacientes, contribuindo para a demora do retorno às funções normais, a elevação dos custos hospitalares e o menor grau de satisfação do paciente. O objetivo desta pesquisa foi caracterizar pacientes com sintomas de náuseas e vômitos nas primeiras 24 horas de pós-operatório. Estudo descritivo, desenvolvido em Enfermarias Cirúrgicas e Unidade de Recuperação Anestésica do Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo. A coleta de dados no pré-operatório foi realizada por meio de entrevista estruturada e exame físico e os dados relacionados aos períodos intra e pós-operatórios foram coletados por meio de análise de prontuário. Dos 100 participantes do estudo, sete apresentaram náuseas e vômitos. Esses sintomas foram mais frequentes nos sujeitos do sexo feminino, que não fumavam, com idade superior a 46 anos e obesos ou sobrepesos. O número reduzido de pacientes que apresentaram náuseas e vômitos no pós-operatório pode estar relacionado à prevenção desses sintomas no pós-operatório ou ao não registro das náuseas e vômitos pelos profissionais.

Palavras-chave: Náusea. Vômito. Náusea e Vômito Pós-operatório. Cuidados Pós-operatórios. Enfermagem.

CARACTERIZACIÓN DE PACIENTES EN EL POSTOPERATORIO INMEDIATO SEGÚN LA PRESENCIA DE NÁUSEAS Y VÓMITOS

RESUMEN

Las náuseas y los vómitos en el postoperatorio son las principales complicaciones después de los procedimientos anestésico-quirúrgicos, que ocurre en aproximadamente el 20 a 30% de los pacientes, contribuyendo para el retraso del regreso a las funciones normales, el aumento de los costos hospitalarios y menor grado de satisfacción del paciente. El objetivo de esta investigación fue caracterizar a los pacientes con síntomas de náuseas y vómitos en las primeras 24 horas del postoperatorio. Estudio descriptivo, desarrollado en Enfermerías Quirúrgicas y Unidad de Recuperación Anestésica del Hospital de Clínicas de la Facultad de Medicina de Ribeirão Preto, Universidad de São Paulo. La recolección de datos en el postoperatorio fue realizada por medio de entrevista estructurada y examen físico y los datos relativos a los períodos intra y postoperatorio se recogieron mediante el análisis de los historiales médicos. De los 100 participantes en el estudio, siete presentaban náuseas y vómitos. Estos síntomas fueron más frecuentes en los sujetos del sexo femenino, que no fumaban, con edad superior a los 46 años y obesos o sobrepesos. El número reducido de pacientes que presentaron náuseas y vómitos en el postoperatorio puede estar relacionado con la prevención de estos síntomas en el postoperatorio o por no haber registro de náuseas y vómitos por los profesionales.

Palabras clave: Náusea. Vómitos. Náusea y Vómito Postoperatorio. Cuidados Postoperatorios. Enfermería.

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