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The Relationship between Post Operative Nausea & Vomitting (PONV) with Type of Eye Surgery with General Anesthesia

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Abstract

PONV is still the most common complaint by patients after undergoing surgery with general anesthesia. PONV is not well understood and its treatment cannot be carried out completely yet. However, in recent years, it has been known a number of risk factors that lead to PONV. Causes of PONV are multifactorial and classified as patient factors, surgery factors and pharmacological factor. In terms of surgery factors, eye surgery is one of the surgeries with a high level of incidence of PONV with differences in incidence of each type of eye surgery. This study was conducted to determine the relationship between the prevalence of post operative nausea and vomiting (PONV) and the type of eye surgery with general anesthesia in patients at SMEC Eye Hospital Medan. The type of this research is cross-sectional study. The study was conducted by using primary data from interview and patients medical records from July 2014 to November 2014. The study included 53 subjects, consisting of a variety of patients with different types of surgery, both intraocular and extraocular.

The results shows that 5 people (9.4%) were diagnosed with PONV, with complaints of nausea as the overall PONV. Onset of PONV experienced in the first 8 hours by 4 people (80%) and 1 person (20%) for the second 8 hours. Type of surgery with the highest incidence of PONV is intraocular surgery. This incidence suffered by 4 people (80%), with vitrectomy as the most diagnosed as many as 2 people (40%). The results of the chi-square statistical analysis found no significant correlation with p-value 0.199 ($p > 0.05$). Based on the analysis it can be concluded that there is no relationship between the prevalence of PONV with the type of eye surgery with general anesthesia. Suggested for subsequent researchers to conduct similar studies with wider coverage and planned a better distribution of the sample size.

Keywords: PONV; Eye surgery; General anesthesia

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Introduction

The incidence of PONV after general anesthesia has reached 30% when general anesthesia is used without prophylaxis and ultimately turned PONV as the most common complaints following surgery with general anesthesia, along with post-operative pain[1]. In other literature reported that incidence of PONV is approximately 10%. But, in addition to the risk factors contained in each individual, the ratio can be increased to the proportions ranged from 21% to 79%[2].

PONV is still not well understood and treated thoroughly. The pathogenesis of PONV remains unclear. However, in recent years, some researchers have identified some risk factors for the occurrence of PONV in adults using multivariate methods. The cause of PONV is multifactorial, including the patient and risk factors, operating factors such as the type of surgery, and pharmacology factor. Surgery which associated with the incidence of PONV is breast surgery or other plastic surgery, repair of strabismus or procedures relating to ophthalmology (eye surgery), otolaryngology (ENT surgery), gynecology (especially laparoscopy), orthopedic surgery, abdominal surgery, and surgical removal of the mass.

Material and Methods

This study was a cross-sectional study aimed to determine the relationship of the prevalence of postoperative nausea and vomiting (PONV) and the type of action on eye surgery with general anesthesia. The research is done between July-November 2014.

This research was conducted in Sumatera Eye Centre (SMEC) Medan, North Sumatra province. The hospital was chosen as the place to be implemented based on a preliminary evaluation study conducted by researchers. In this hospital, there are various types of eye surgery is performed and the use of general anesthesia. In addition, the population is also quite a lot and there are variations in terms of environmental and socio-cultural origin.

The sample in this study is that patients Sumatera Eye Centre (SMEC) of July 2014 to November 2014 who underwent eye surgery with general anesthesia that meet the inclusion and exclusion as mentioned below.

The research sample selection criteria are:

1. Inclusion Criteria

a. Patients undergoing eye surgery with general anesthesia.
b. Patients hospitalized for ≥ 24 hours.
c. Patients who can communicate with investigators.
d. Patients between the ages of 18 - 60 years.
e. Eligible patients ASA I and ASA II (American Society of Anaesthesiology Classification).
f. Patients who underwent surgery < 3 hours.

2. Exclusion Criteria

Patients who are pregnant, have a history of drug abuse, gastrointestinal disorders (intestinal obstruction, impaired gut motility, gastroenteritis, irritable bowel syndrome, dyspepsia, gastroesophageal reflux disease (GERD), gastro-intestinal infections, appendicitis, hepatitis, cholecystitis, inflammatory bowel syndrome, pancreatitis, peptic ulcer, peritonitis, food poisoning), disorders and metabolic diseases, increased intracranial pressure, head injury, migraine, seizure disorders, vestibular disorders, malignancies, psychiatric disorders and psychogenic, drug-induced, nephrolithiasis and other renal diseases, myocardial infarction, as well as nausea and vomiting before surgery.

Table 1: Sample frequency distribution by age group.

No.	Age (Year)	Amount	(%)
1.	18 - 24	9	17,0
2.	25 - 31	5	9,4
3.	32 - 38	5	9,4
4.	39 - 45	7	13,2
5.	46 - 52	11	20,8
6.	53 - 60	16	30,2
	Total	53	100,0

Table 2: Sample frequency distribution by sex.

No.	Sex	Amount	(%)
1.	Man	33	62,3
2.	Woman	20	37,7
	Total	53	100,0

Table 3: Sample frequency distribution based on type eye surgery.

No.	Type of Eye Surgery	Amount	(%)
1.	Catarract	17	32,1
2.	Trabeculectomi	1	1,9
3.	Vitrectomi	19	35,8
4.	Ptosis Repair	1	1,9
5.	IOL Reposition	1	1,9
6.	Evisceration	4	7,5
7.	Oculi Trauma	6	11,3
8.	Glaukoma	2	3,8
9.	Tumor Excition	1	1,9
10.	Strabismus	1	1,9
	Total	53	100,0

Result

As a result, 5 (9.4%) of 53 subjects suffer from PONV (nausea and / or vomiting after undergoing eye surgery with general anesthesia). By sex most of the subjects was male that is 33 people (62,3%) and female was 20 people (37,7%). By onset or incidence of PONV most of subject was happened in first eight hours. On the results of this study are also the age group most likely to suffer from PONV is the age group 18 - 24 years, 32 - 38 years, 39 - 45 years, 46 - 52 years and 53 - 60 years respectively amounted to 1 (20%).

Discussion

Based on these results, all samples are suffering from nausea as a complaint, as many as five people (9.4%) with the remaining 48 people (90.6%) did not experience nausea or vomiting. This figure is far fewer than the numbers the results of research by Doubravska et al.[3], where he found the overall incidence of PONV in patients undergoing surgery is 25 - 30%.

Likewise, the results of research by Aftab et al.[4], earned as much as 15% of patients who underwent eye surgery experience PONV[2], said that in other literature, the reported incidence of PONV is approximately 10%, which is almost similar to the incidence rate of this study but still higher. This may be partly due to efforts to lower the risk of nausea and vomiting

in patients with multimodal approach, starting before surgery, during surgery, as well as added by the use of antiemetic prophylaxis as possible after surgery.

The incidence of nausea by Chandrakantan et al.[5] is in the range between 22% to 38%. Press et al.[6] suggested that the frequency of symptoms that are often complained anesthesia-related nausea after surgery is as much as 10 - 40%, whereas vomiting as much as 10 - 20%. Gan et al.[7] also says that the incidence of nausea of PONV own approximately 50%. This is quite different to that obtained from the results of this study, and this can be explained because of the antiemetic drug treatment after surgery that has helped suppress nausea and vomiting reactions to drugs known as serotonin antagonists, namely ondansetron. At least incidence of PONV that is seen to the conclusion that given antiemetic treatment was quite good and effective.

Based on the results of most studies done, ophthalmological surgery is associated with a high frequency of PONV. From the type of eye surgery performed, it was found that the incidence of PONV intraocular surgery resulted at most as many as four people (80%). Operation vitrectomy (eye surgery intraocular) causes the occurrence of PONV most is 2 people (40%), followed by cataract surgery (intraocular), trabeculectomy (extraocular), and evisceration (intraocular) with the respective amount by 1 person (20%).

In research[4], this one gets is very different, where the operating strabismus, which is the operation of the extraocular, showed a much higher incidence of up to two times compared with other operations such as retinal detachment (included in vitrectomy) and cataracts, which is an intraocular surgery, In his discussion, he suspects it may be due to oculocardiac vagal reflex triggered by the manipulation of the eye muscles. There is the possibility of a different result is caused by the lack of equivalent number of patients who undergo surgery each eye, which vitrectomy and cataract surgery is more dominant, so that the incidence of nausea and / vomiting less can be found on other operations. It is thought to be related to an increase in intraocular pressure of the eye. On one hand, Pierre et al.[8] also states that the general type of operation can not provide information that is relevant, reproducible and clinically relevant for assessing the risk of PONV in patients. Gan et al.[7] also state the type of surgery as a risk factor is controversial. Thus, as has been proposed and based on the results of this study showed no correlation between the type of eye surgery and PONV, all of this is still unclear as to whether the operation is a definite cause of PONV.

This study shows that the incidence of PONV was higher in males as many as four people (80%) compared to women who counted 1 people (20%). This is in contrast to studies of Aftab et al.[4], where the study confirmed that the incidence of PONV is higher in women than in men, ie respectively by 20% and 10% and it is associated with serum levels of gonadotropins and other hormones (especiallyfemale hormones). Doubravska et al.[3] which states that women are 4.6 times more likely to experience PONV than men. This difference is thought to be caused by the incidence of PONV obtained is not much in this study.

According to Tinsley et al.[9], patients between the ages of 3 - 50 years are most at risk to suffer from PONV. A similar trend is also found in an earlier study conducted by Aftab et al[4], in which patients between the age of 18 - 49 years (24%) had a higher incidence compared to patients between the ages of 49 - 79 (6%). However, the research Doubravska et al.[3], found that age did not affect the incidence of PONV. Age has been known to not affect strongly on the incidence[10]. In this study, the results also showed no association of age with the incidence of PONV may be caused also by the low incidence of PONV, making it less visible linkages.

Tinsley et al.[9] states, obesity, weight as one of the variables, has a correlation with the incidence of PONV whereby the weight of someone, the higher the risk for PONV. In this study, the incidence of PONV was obtained which gradually higher weight gain, and the highest in the range of 60 - 69 kg for 3 people (60%). One of the reasons that can be used to describe this relationship is that adipose tissue acts as a reservoir for the anesthetic agent thereby extending the half-life of the drug to continue to be released into the bloodstream during the recovery or due to excess production of estrogen as a result of adipose tissue that[9,11]. But according to Synder et al.[12] a systematic review has failed to show a significant effect of weight against PONV.

There are several limitations in this study. Researchers did not examine the relationship between risk factors such as a history of PONV another motion sickness, smoking history and history of pain in the incidence of PONV. But it is intended to focus the study on the relationship type of eye surgery with the incidence of PONV. In addition, researchers also can not definitely predict the number of patients undergoing each type of eye surgery, which may lead to less significant research results.

Conclusion

Based on this research, there is no relationship between the prevalence of PONV and type of eye surgery with general anaesthesia. The prevalence of PONV in eye surgery with general anesthesia is 9.4%

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