

ROLE OF PROPHYLACTIC ANTIEMETICS IN ORAL AND MAXILLOFACIAL SURGERY

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Abstract

Objective: To find out the occurrence of postoperative nausea and vomiting (PONV) in oral and maxillofacial surgery done under general anaesthesia and to evaluate the purpose of using prophylactic antiemetic drugs.

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Design: Observational study.

Place and Duration of the Study: Oral and Maxillofacial Department, KEMU / Mayo Hospital Lahore, from September 2011 to June 2012.

Method: The number of patients who were operated in oral and maxillofacial surgery ward irrespective of age and gender for this study were 240. Risk factors related with PONV including gender, anesthetic drug used, surgical procedure, approach used, total time of surgery and postoperative use of opioids were investigated. A “wait and watch” scheme was followed in patients with complaint of PONV. Antiemetics to be given in those cases where more than 2 episodes of vomiting took place.

Results: It was found out that only 11 patients experienced from nausea and vomiting in post operative period. A notable relation was seen between PONV and female population, total time of surgery, anesthetic drug, surgery of tumor and temporomandibular joint. The surgical approach and opioids in postoperative period for PONV were found to be insignificant.

Conclusion: PONV is not a significant finding in oral and maxillofacial surgery. We find out that there is no logic for the use of prophylactic antiemetic drugs in maxillofacial surgery.

Key words: Post operative nausea and vomiting, Oral and Maxillofacial surgery, Antiemetics.

Introduction

Postoperative nausea and vomiting (PONV) is complication of surgery done under general anaesthesia. Nausea and vomiting are reasons for patient dissatisfaction in post operative period. Complications of PONV may include aspiration, laryngospasm, and dehydration, electrolyte disturbances, gastric bleeding, increased intracranial pressure.¹

PONV has caused increased duration of hospital stay and has resulted in increased use of resources such as intravenous fluids, drugs, supplies, and physician and nursing attention, thus increasing the financial cost. Management of PONV continues to engage both the anesthetist and nursing staff. Various anesthetic techniques and newer antiemetic medications are being used to control PONV. The use of antiemetics for PONV has brought forth two schools of thought, with some individuals insisting on prophylactic antiemetic medications and others preferring symptomatic treatment for PONV.

Numerous studies have been conducted on the incidence of PONV, yet information regarding PONV incidence after oral and maxillofacial surgical procedures has been scanty, especially after the 1970s and 1980s.^{2,3} So a study was conducted at oral and maxillofacial surgery department King Edward medical university to find the incidence of post operative nausea and vomiting at our centre and benefits of using prophylactic antiemetics.

Materials and Methods

240 patients irrespective of any age and gender who were operated for oral and maxillofacial procedures under general or dissociative anaesthesia were used for this study, and risk factors associated with PONV were analyzed (Table 1). Duration of surgical procedure was calculated from the time of induction of general anesthesia / dissociative anesthesia to the time of extubation. The duration was divided into 3 groups (group 1, < 2 h; group 2, 2 to 3 h; and group 3 to 4 h), and episodes of PONV in each group were recorded. Volume, frequency, and color of vomitus were recorded in all cases of PONV. A "watch-and-wait" scheme was followed in patients with PONV. Rescue antiemetics were prescribed only in patients with 2 or more episodes of PONV in 6 hours postoperative period. All patients were prescribed postoperative NSAIDs for control of pain and inflammation.

Results

Of the 240 patients (159 male and 81 female) included in this study, only 11 (4.58%) patients (4 male and 7 female) had episodes of PONV. Table 2 shows the frequency of PONV in various surgical procedures. Table 3 depicts the relationship between the duration of surgery and PONV. Of the 11 individuals who experienced PONV, only 3 individuals had more than 1 episode of PONV and subsequently were given antiemetics. After this intervention, no further episodes of emesis were recorded. Color of vomitus was bloody in all patients. Table 4 shows the frequency and volume of vomit and the intervention performed. Halothane and nitrous oxide were used in all patients, except in 13 in whom ketamine was used. Seven patients receiving halothane and nitrous oxide and 4 patients receiving ketamine experienced episodes of PONV.

It was found that PONV is associated with certain

Table 1: Risk Factors Associated with PONV.

Patient's gender
Anaesthetic drug
Duration of surgery
Postoperative periods
Intraoral / extraoral approach

Table 2: Type of Surgical Procedure and PONV.

Serial No.	Type of Surgery	No. of Patients	PONV	%
1	Oncology	58	3	5.17
2	Trauma	122	4	3.27
3	TMJ Surgery	29	3	10.03
4	Tumors / Cysts	31	1	3.22

Table 3: Duration of Surgery and PONV.

Serial No.	Duration of Surgery	No. of Patients	PONV	%
1	1 – 2 h	67	1	1.49
2	2 – 4 h	91	3	3.29
3	> 4 hrs	82	7	8.53

Table 4: Patient Data and Intervention Performed.

Serial No.	Age / Gender	Type of Anaesthesia	Surgery Type	Duration	Vomit Volume	Frequency	Intervention
1	27/F	GA	1	> 4 hrs	250 ml	2 episodes	Antiemetics
2	54/M	GA	1	> 4 hrs	150 ml	1 episode	-
3	12/F	GA	3	> 2 – 4 hrs	350 ml	2 episodes	Antiemetics
4	43/F	Ketamine	4	1 – 2 hrs	150 ml	1 episode	-
5	59/F	GA	1	> 4 hrs	160 ml	1 episode	-
6	32/M	Ketamine	2	1 – 2 hrs	150 ml	1 episode	-
7	24/M	Ketamine	2	1 – 2 hrs	145 ml	1 episode	-
8	38/F	GA	2	2 – 4 hrs	130 ml	1 episode	-
9	9/F	GA	3	2 – 4 hrs	120 ml	1 episode	-
10	17/F	GA	3	2 – 4 hrs	350 ml	3 episodes	Antiemetics
11	63/M	GA	2	2 – 4 hrs	110 ml	1 episode	-

factors such as gender, anaesthetic agent, duration of surgery and surgeries of oncology and TMJ. There was no significance of surgical approach and the postoperative opioids on occurrence of PONV.

Discussion

The decrease in the incidence of life – threatening anesthetic complications has led clinicians to focus on the more common distressing symptoms after surgery, such as pain and PONV.

Although much effort rightly has been placed on providing adequate pain relief after surgery, many surgeons continue to view PONV as a minor complication that poses little threat to the patient. In contrast, most patients view PONV as being more debilitating than the operation itself.⁴ The overall incidence of PONV is currently estimated to be approximately 20% to 30%⁵ but varies between institutions and even between anesthesiologists within each hospital. This is a dramatic improvement over the 75% to 80% incidence during the days of ether and cyclopropane.⁶ However, in certain high risk procedures and patient populations, the incidence of PONV can be as frequent as 70% to 80%.^{7,8} Postoperative nausea and vomiting (PONV) are among the troublesome experiences in post operative surgical period under general anaesthesia. PONV occurs mainly within the first 24 hours and can lead to notable morbidity, increased hospital stay, increased

financial costs and most significant, patient discomfort. Prophylactic antiemetics are given to avoid these issues although the incidence of PONV in maxillofacial procedures is quite less. Our study includes procedures of oral and maxillofacial surgery. Swallowed blood acts as stimulus of PONV in post operative patients of oral and maxillofacial surgery and tonsillectomy. It has been hypothesized that the resultant negative nitrogen balance after the breakdown of swallowed blood products in the stomach appeared to be one of the causes of postoperative emesis.⁹ Another unique feature of most oral and maxillofacial surgical procedures is that surgical sites are usually closed primarily after securing hemostasis, unlike procedures such as adenotonsillectomy, in which the wound is left raw and open and prone to postoperative ooze with a resultant risk of swallowing. The fact that PONV is observed with surgical procedures not involving the oral and maxillofacial region and is associated with multifactorial causes considerably weakens the above hypothesis. The case for symptomatic treatment of PONV has been put forth succinctly.¹⁰ A standardized general prevention of PONV was identified as not being cost-effective and not to be required as a routine intervention in all surgical patients.¹¹ Studies by Scuderi et al and Wagley et al evaluated the effect of preoperative ondansetron in patients undergoing general anesthesia for dentoalveolar surgery and found no difference with respect to PONV as compared with placebo.^{12,13} Furthermore, patients often obtain relief from the unplea-

sant sensation of nausea after an episode of emesis, and the regular use of prophylactic antiemetics may unnecessarily prolong the discomfort. Another factor to be considered is that many anesthetic techniques and surgical protocols use drugs that have inherent antiemetic properties.¹⁴ Complications such as aspiration of vomitus, wound dehiscence and asphyxia have often been considered to justify use of prophylactic antiemetics. This concern seems greatest when encountering a patient on maxillomandibular fixation (MMF), necessitating special nursing care for emergency removal of the wires.^{15,16} This fear of death from aspiration of vomitus appears unfounded and misplaced. A study that evaluated the efficiency of emergency jaw release among hospital staff observed an average time of more than 2 min for this “urgent” procedure and logically concluded that the need of opening maxillomandibular fixation was questionable in the initial care of obstruction or vomiting.¹⁷ A single case report of such an alleged incident resulting in a fatal outcome, on investigation, found no evidence to consider aspiration and asphyxia as cause of death.¹⁸ Edgin et al, in a questionnaire study among residents, mentions a total of 22 patients who needed emergency release from MMF in a 5 – year period.¹⁹ However, it is unclear whether PONV was the cause of release in any of the cases.¹⁹ Generally, when the patient is fully awake and responding to verbal commands, the clearing of emesis will rarely require the release of MMF. Suctioning of the nares and buccal vestibules will usually aid the patient in removal of vomitus from the mouth. Apfel et al developed a simplified PONV risk score identifying 4 primary patient risk factors, namely, female gender, history of PONV / motion sickness, nonsmoker status, and postoperative opioids.⁷ The risk factors are additive, with a PONV incidence of 60% to 80% expected with 3 to 4 risk factors. These investigators have suggested that prophylactic antiemetic drugs be given to patients who have a moderate-to-high PONV risk. With gynecologic, abdominal, pediatric, middle ear, and strabismus surgeries considered as high – risk procedures for PONV, common factors such as age and gender of patients, alterations in gastric motility, and stimulation of vestibular apparatus and parasympathetic nervous system may all account for the higher incidence.¹

PONV appears to be a self-limiting phenomenon, with many patients obtaining relief from nausea after vomiting. With the incidence of intractable PONV approximating 0.1%, symptomatic treatment of PONV seems to be a more rational approach. Routine use of

prophylactic antiemetics is not necessary in the management of post operative nausea and vomiting after oral and maxillofacial surgical procedures. There does not appear to be a rationale for the prophylactic administration of antiemetic drugs in such surgical procedures. A watch-and-wait policy and simple GL may provide significant relief.²⁰ Antiemetic medications are to be considered only in case of non-responders and intractable PONV.²⁰

Conclusions

PONV is one of the most unpleasant experiences and cause of longer stay at hospital. But in oral and maxillofacial surgery procedure incidence of PONV is quite less i.e. only 4.8% so prophylactic antiemetics should not be recommended in oral and maxillofacial surgery.

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