Profilaxia de Náuseas e Vômitos Pós-Operatórios em Obesos Mórbidos Submetidos a Gastroplastias por Laparoscopias.
Estudo Comparativo entre Três Métodos *

Prophylaxis of Postoperative Nausea and Vomiting in Morbidly Obese Patients Undergoing Laparoscopic Gastroplasties. A Comparative Study among Three Methods*

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RESUMO
Mendes MN, Monteiro RS, Martins FANC - Profilaxia de Náuseas e Vômitos Pós-Operatórios em Obesos Mórbidos Submetidos a Gastroplastias por Laparoscopias. Estudo Comparativo entre Três Métodos. Results: There was no difference in the incidence of nausea and vomiting between the groups (One-way ANOVA). The incidence of postoperative nausea and vomiting in the different groups was: Cont group – 78.94%; Dexa group – 62.5%; Onda group – 50% and group Dexa + Onda – 18.8% (p = 0.0002).

CONCLUSÕES: A incidência de náusea e/ou vômito pós-operatório em gastroplastia videolaparoscópica é reduzida com a associação ondansetrona e dexametaseona de forma mais eficaz do que o uso isolado dessas medicações.

Unitermos: CIRURGIA: gastroplastias: videolaparoscópica; COMPLICAÇÕES: náusea e vômito; DOENÇAS, Obesidade: mórbida.

SUMMARY

BACKGROUND AND OBJECTIVES: Videolaparoscopic bariatric surgeries are associated with a high incidence of postoperative nausea and vomiting. Those events can lead to significant morbidity, increase hospitalization costs, as well as patient dissatisfaction. The objective of this study was to compare different prophylaxis protocols of postoperative nausea and vomiting in videolaparoscopic gastoplasties.

METHODS: This is a randomized prospective study with 77 patients undergoing videolaparoscopic gastoplasty. Patients were divided into four groups as follows: Cont group, control (n = 19) where antiemetics were not administered; Dexa group (n = 16), patients received dexamethasone; Onda group (n = 20), patients received ondansetron; and Dexa+Onda group (n = 22), patients received dexamethasone and ondansetron. All patients underwent standardized anesthesia and postoperative analgesia with intravenous morphine. Patients who were taking gastric protectors or antiepileptics and those with hiatal hernia were excluded. Demographic data, duration of the surgery, doses of morphine, and development of nausea and vomiting in the immediate postoperative period (up to six hours) were recorded.

RESULTS: Demographic data and doses of morphine administered did not differ among the groups (One-way ANOVA). The incidence of nausea and/or vomiting in the different groups was: Cont group – 78.94%; Dexa group – 62.25%; Onda group – 50%; and Dexa+Onda group – 18.8% (p = 0.0002).

CONCLUSIONS: The incidence of postoperative nausea and vomiting in videolaparoscopic gastoplasties was more effectively reduced with the association of ondansetron and dexamethasone than with each drug separately.

Keywords: COMPLICATIONS: nausea and vomiting; DISEASES, Obesity: morbid; SURGERY: gastoplasty: videolaparoscopic.
abdominal pressure jeopardizes the stitches, increases central venous pressure, and increase the risk of aspiration of gastric contents. Electrolyte imbalances and an increase in intracranial pressure can also be observed. The effort during vomiting increases postoperative pain and autonomous responses. The etiology of nausea and vomiting can be related with gender, age, weight, history of PONV, smoking, fear and anxiety, pain, hypotension, and dehydration. The presence of conditions that affect the gastroesophageal junction, such as hiatal hernia and obesity, besides the presence of blood and secretions in the stomach, can increase the incidence of PONV. The choice of anesthetic technique (opioids, nitrous oxide, and halogenated anesthetics) and place and duration of the surgery are also important factors. Videolaparoscopic gastroplasties are associated with a high incidence of postoperative nausea and vomiting and the number of those procedures has been increasing progressively, hence the need to search for methods to prevent those undesirable events in this patient population. Several drugs can be used in the prophylaxis of postoperative nausea and vomiting and among them we should mention: dexamethasone and ondansetron, which are widely used. Ondansetron, a serotonergic receptor (5-HT3) antagonist, is particularly useful in the treatment of PONV related to blood-induced stimulation of gastric enterochromaffin cells, and it has been the most accepted drug in the prophylaxis of PONV in patients with more risk factors. Dexamethasone, a corticosteroid with an unknown antiemetic effect, is also used very often in the prevention of PONV, especially in association with other drugs. The objective of this study was to compare the efficacy of dexamethasone and ondansetron, alone or in combination, in the prophylaxis of postoperative nausea and vomiting in patients with morbid obesity.

METHODS

After approval by the Medical Ethics on Research Committee of the Hospital Santa Rita (São Paulo, SP, Brazil), 77 patients ages 20 to 56 years, ASA II, body mass index (BMI) ≥ 35 kg.m⁻² undergoing videolaparoscopic gastroplasty participated in the prospective clinical study. Patients taking gastric protectors or antiemetics as well as those with hiatal hernia were excluded. Patients were randomly divided into four groups according to the antiemetic drug administered: Cont group (n = 19), control group, patients did not receive any antiemetic drug; Dexa group (n = 16), 0.1 mg.kg⁻¹ of Dexamethasone corrected for body weight (BW) up to a maximum of 10 mg; Onda group (n = 20), ondansetron 0.1 mg.kg⁻¹ of BW up to 8 mg; and Dexa+Onda group (n = 22), in which both drugs in the doses mentioned above were associated. In the operating room, monitoring consisted of: electrocardioscope, pulse oximeter, automatic non-invasive blood pres-
sure, and capnograph with inspiratory and expiratory gas analyzer. After venipuncture and oxygenation with 100% O₂ all patients underwent standardized anesthetic induction with fentanyl (5 μg.kg⁻¹ of BW), propofol (2 mg.kg⁻¹ of BW) and atracurium (0.5 mg.kg⁻¹ of BW), and maintenance with remifentanil (0.1 to 0.3 μg.kg⁻¹.min⁻¹ of BW) and 1% isoflurane in a mixture with oxygen and medical air (1:1).

Patients were maintained in controlled ventilation with a flow of 2 L.min⁻¹, tidal volume 8 to 10 mL.kg⁻¹ of BW, FiO₂ 0.5, and adequate respiratory rate to maintain the expired fraction of expired CO₂ around 35 to 40 mmHg. Ketoprofen 100 mg, and dypirone 2 g, administered immediately after anesthetic induction were used as adjunct to analgesia, along with morphine 0.08 mg.kg⁻¹ of BW 30 minutes before the end of the surgery.

At the end of the surgery, atropine and neostigmine were used to reverse the neuromuscular blockade and patients were extubated. They were transferred to the post-anesthetic unit care (PACU), where an anesthesiologist unaware of which group the patient belonged to, evaluated patients periodically for the presence of nausea and vomiting. Dimeclididrate 50 mg was administered to patients who developed those undesirable effects.

The following parameters were evaluated: anthropometric data, duration of the surgery, and dose of morphine. The incidence of postoperative nausea and vomiting in each group was also recorded. One Way ANOVA was used for the statistical analysis of the anthropometric data, dose of morphine, and duration of the surgery. The incidence of PONV in patients in the four groups was analyzed by the Chi-square test for tendencies.

**RESULTS**

All groups were homogenous for age, body mass index (BMI), duration of the surgery, and dose of morphine (Table I). One Way ANOVA did not detect statistically significant differences among them. As for the incidence of nausea and vomiting (Figure 1), it was observed that: the Cont group presented in the first six postoperative hours a 78.94% incidence of nausea and vomiting; in the Dexamethasone group 62.50% of patients developed PONV; in the Ondansetron group the incidence of PONV was 50%; and in the Dexamethasone and Ondansetron group 18.18%. Using the Chi-square test for tendencies a p= 0.0002 was observed implying a significant linear tendency between treatment and the reduction in the incidence of nausea and vomiting. The association of dexamethasone and ondansetron showed better results than each drug alone.

**DISCUSSION**

Anthropometric parameters did not show significant differences among the study groups. A correlation between obesity and greater incidence of postoperative nausea and vomiting is known to exist. In the present study, statistically significant differences among the study groups in body mass index were not observed. Similarly, the mean age of the patients did not differ among all four groups. Older individuals have an increased tendency to develop nausea and vomiting after anesthesia-surgeries. The duration of the surgery, another determinant factor for the development of postoperative nausea and vomiting, did not differ among the groups.

The etiology of nausea and vomiting is multifactorial and it is related with four types of neurotransmitters: serotonin,
MÉTODO: Estudio prospectivo hecho al azar con 77 pacientes sometidos a la gastroplastia videolaparoscópica. Fueron divididos en: grupo Cont, control (n = 19) sin administración de cualquier antiepético; grupo Dexa (n = 16) administrado dexametasona; grupo Onda (n = 20), ondansetrona; grupo Dexa + Onda (n = 22), asociación de las dos últimas medicaciones. Para todos los pacientes se aplicó una anestesia estandarizada y una analgesia postoperatoria con morfina por vía venosa. Se excluyeron del estudio aquellos que usaban protectores gástricos o antieméticos, como también portadores de hernia de hiato. Se registraron los datos demográficos, duración de la operación, dosis de morfina usada y el aparecimiento de náuseas y vómitos en el postoperatorio inmediato (hasta seis horas).

RESULTADOS: No hubo diferencia estadística entre los grupos con relación a los datos demográficos y a las dosis de morfina usadas (One-way ANOVA). La incidencia de náusea y/o vómito en cada grupo fue: grupo Cont - 78,94%; grupo Dexa - 62,5%; grupo Onda - 50% y grupo Dexa + Onda - 18,8% (p = 0,0002).

CONCLUSIONES: La incidencia de náusea y/o vómito postoperatorios en gastroplastia videolaparoscópica queda reducida con la combinación de la ondansetrona y la dexametasona de forma más eficaz que con el uso aislado de esas mismas medicaciones.