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Case Report

An unexpected complication: Acute dystonic reaction following use of ondansetron

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Abstract

Postoperative nausea and vomiting is one of the most common complications and shows variety depends on anesthesia method and management. Different drug groups are used for the prophylaxis and treatment of nausea and vomiting.

Ondansetron, a "carbazalone" derivative, is structurally similar to serotonin and effectively used in the treatment of nausea and vomiting, particularly in chemotherapy applications, by antagonizing the selective 5-hydroxytryptamine-3 (5-HT3) receptor. Ondansetron has also been used for postoperative nausea and vomiting effectively and safely for a long time.

In this case report, we aimed to present visual disturbance and acute dystonic reaction following use of ondansetron for postoperative nausea and vomiting.

Keywords: General Anesthesia; Postoperative Nausea And Vomiting; Ondansetron; Acute Dystonia; Diphenhydramine.

INTRODUCTION

Postoperative nausea and vomiting (PONV) is one of the most common complications and shows variety depends on anesthesia method and management. Different drug groups are used for the prophylaxis and treatment of nausea and vomiting (1).

Ondansetron, a "carbazalone" derivative, is structurally similar to serotonin and effectively used in the treatment of nausea and vomiting, particularly in chemotherapy applications, by antagonizing the selective 5-hydroxytryptamine-3 (5-HT3) receptor. Ondansetron use has increased for the prophylaxis and treatment of PONV over time. Side effect rate is very low and well tolerated (2).

Dystonia is a symptom that involves spontaneous, intermittent or continuous muscle contractions, with rotatory and repetitive movements or abnormal posture. The acute dystonic reaction first manifests itself with contractions in the face, neck, and back muscles, opistotonus, torticollis, oculojiric crisis, dysarthria and trismus (3). The most common type is acute dystonic reaction associated with antipsychotics, antiemetics, antihistamines, decongestants, expectorants (4).

In this case report, we wanted to present visual disturbance and acute dystonic reaction following by using ondansetron for nausea after thyroidectomy.

CASE REPORT

Pre-operative evaluation of a 27-year-old, 55kg, ASA 2 female patient with multinodular goiter (MNG) who has planned out thyroidectomy, reported that there is no comorbid disease and 5 mg methimazole is used daily due to MNG. The patient doesn't have any surgery, but she has allergy to methachloropropamide and this drug has caused contractions on her body before.

Physical examination findings and routine laboratory tests were evaluated as normal preoperatively. The patient was informed about the method of anesthesia to be applied. Patient's written consent was obtained for all procedures to be applied to the patient.

After placement of standard monitors [electrocardiogram (ECG), pulse oximeter (sPO2), non-invasive blood pressure (NIBP), surgical pleth index (SPI), entropy, neuromuscular transport (NMT)], baseline hemodynamic values were recorded as pulse: 107 min-1, sPO2: 96%, TA: 125/78 mmHg. 1 mg midazolam and 120 mg propofol was used for induction of anesthesia, and 25 mg rocuronium was used for intubation. After the train of four (TOF)-count value had shown zero, intubation was performed successfully and

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surgery was started without any problems. Hemodynamic parameters were stable throughout the operation for approximately 1 hour and 30 minutes, 100 mg of tramadol was administered to the patient for analgesia.

The TOF value was above 90 before extubating and the patient was successfully extubeted. After that she was taken to post operative care unit (PACU).

The patient complaining of nausea in PACU was given iv 4 mg of ondansetron. The patient complained of visual impairment shortly afterwards and then intermittent involuntary contractions began to appear in the limbs (Figure 1).

Figure 1. contraction moments of the patient

After about 5 minutes, the visual problem was completely removed but the contractions were continued, and the patient stated that the same symptoms appeared after the administration of methocloropropamide before. The involuntary contractions were evaluated as drug-induced acute dystonic reaction (ondansetron). 20 mg iv diphenhydramine was applied to the patient. It was seen that the contraction of the patient became less.

The patient was followed for 2 hours in the PACU and any dystonic reaction was not observed. The surgical team was informed and the patient was transferred to her room. Postoperative neurology consultation was evaluated as drug-induced acute dystonia too. The patient who did not repeat the contractions was discharged by healing second day after surgery.

DISCUSSION

Anesthesia, whether general or regional, can lead to various unexpected and undesired complications that can range from a local reaction in the injection site to death. These effects may occur in premedication, intraoperative or postoperative period (5).

Postoperative nausea and vomiting (PONV) is one of the most common complications and shows variety depends on anesthesia method and management. Since postoperative airway reflexes are not fully returned due to residual drug effects, nausea and vomiting constitute a risk of pulmonary aspiration. In addition, persistent vomiting can lead to dehydration and electrolyte imbalance (3).

Antiemetic agents may be administer at premedication, induction, or postoperative period to prevent PONV. The agent to be used for the PONV prophylaxis should be effective, long acting, low cost, and have no side effects. A wide variety of prophylactic and therapeutic agents such as antihistamines (eg: hydroxyzine, promethazine), butiriphenonones (eg: droperidol), gastrokinetic agents (eg: metoclopramide), corticosteroids (eg: dexamethasone) and 5-HT3 receptor antagonists (eg: ondansetron, granisetron) can be use successfully. Anesthesiologist should select the most appropriate agent by evaluating his / her patient (5).

Metochloropropamide is a central and peripheral antiemetic that is frequently preferred for the treatment of nausea and vomiting. It triggers gastrointestinal system motility and shortens gastric emptying period. However, it can pass through the blood-brain barrier and exert an adverse effect on the extrapyramidal system (6). Extrapyramidal system side effects occur by antagonizing dopamine receptors in basal ganglia (7). Acute dystonic reaction is one of these side effects and can be detected like regional tonus elevation, acute dyskinesia, ocululic crisis, torticollis, dysarthria, trismus, neuroleptic malignant syndrome, blepharospasm and parkinsonism(4,8).

This side effect, which often occurs after the use of methocloropropamide, is especially seen in children and young adult patients. It can develop dose-dependent or idiosyncratic, so it can occur even at treatment doses (4,9).

Taking account the patient's allergy of metaclopramide, ondansetron was chosen rather than metaclopramide while planning antiemetic for PONV after surgery. Ondansetron is a selective 5-HT3 receptor antagonist. As it is used for the treatment of nausea and vomiting in patients receiving chemotherapy, it also useseffectively and safely for PONV for a long time. It is well tolerated and the incidence of side effects is very low (5). Side effects such as arrhythmia, headache, constipation, dyspepsia, insomnia, diarrhea, insomnia, impaired liver function tests, dizziness and visual impairment can be seen in the studies but it is more effective than the classical agents such as droperidol and methocloropropamide in PONV prevention and treatment, and also has lower rate of side effects (10). It has also been reported that ondansetron has 5-HT3 receptor antagonism and inhibit dopamin releasing cells (11).

However, in a case report by Siz MH et al., a patient who had undergone 3 operations at different intervals and underwent the same anesthesia protocol by the same anesthesiologist did not experience any problems after the first operation, mild visual impairment appeared after the second operation, significant shaking and visual impairment appeared after the third operation and continued along six hours. They argued that this effect was caused by repeated doses of propofol and ondansetron (12). In another case report, a 4-year-old child developed seizures, hypoglycemia, and dystonia after ondansetron treatment because of nausea (13).

Ondansetron is frequently used in our clinic for PONV treatment and prophylaxis and is administered safely to patients thanks to low side effect profile. The finding of acute dystonic reaction in our case is an unexpected side effect for this agent and we think that it may be predisposed to this phenomenon because it has experienced the same reaction previously associated with the use of methachloropropamide.

As a result, PONV is a frequent complication after anesthesia and can be safely and effectively controlled with existing agents. Ondansetron can be safely chosen because of its low side effect profile, but the agent to be used should be selected by patient-specific evaluation by the anesthetist. On patients who have problems with the use of methocloropropamide for the treatment of PONV, more data is needed to discuss for using ondansetron.

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