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CASE REPORT

Acute dystonia after domperidone use: A rare and an unexpected side effect

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ABSTRACT

Domperidone is a dopamine receptor antagonist with gastrokinetic and anti-emetic effects. Domperidone is widely used worldwide as an anti-emetic and in the treatment of gastroparesis and gastroesophageal reflux. Because domperidone does not readily cross the blood-brain barrier, central nervous system side effects are not expected. Herein, we reported a 12-year-old girl who presented with dystonia after domperidone usage. We present a 12-year-old girl with a 40 kg body weight who was admitted to our pediatric emergency department with numbness, stiffness, and twisting in the neck, hands, arms, and tingling in the legs and back. We administered 3 mg biperiden, an anticholinergic, through slow intravenous infusion. The patient's dystonic reaction recovered 10 min after biperiden infusion. Based on our literature search, we presented one of the few acute dystonia cases after domperidone use in children. To the best of our knowledge, our case is the first case report in children who were successfully and rapidly treated with anticholinergic, biperiden.

Keywords: Biperiden, cholinergic antagonists, domperidone, dopamine antagonist, dystonia.

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INTRODUCTION

Domperidone is a dopamine receptor antagonist with gastrokinetic and anti-emetic effects.[1] Domperidone is widely used worldwide as an anti-emetic and in the treatment of gastroparesis and gastroesophageal reflux. Domperidone acts through both central and peripheral dopamine receptors. The prokinetic effect of this drug occurs through enteric dopamine receptors.[2] Domperidone works as an anti-emetic by the central dopaminergic receptor blockage around the area postrema and vomiting center.[3]

Another anti-emetic that has a similar mechanism of action to domperidone is metoclopramide. Metoclopramide, like domperidone, is both a peripheral and a central dopamine receptor antagonist.[1] Although metoclopramide crosses the blood-brain barrier well, domperidone does not readily cross the blood-brain barrier.[3] As a result, the expected central nervous system (CNS) side effects of metoclopramide are not commonly seen after domperidone use. Especially, dystonia developing after metoclopramide use is a well-defined side effect. Domperidone, which has serious side effects such as ventricular arrhythmias and sudden cardiac death, is a drug that is generally accepted as safe except for cardiac side effects. Herein, we reported a 12-year-old girl who presented with dystonia after domperidone usage.

CASE REPORT

A 12-year-old girl with 40 kg body weight was admitted to our pediatric emergency department with numbness, stiffness, and twisting in the neck, hands, arms, and tingling in the legs and back. The mother stated that her daughter received 10 mg domperidone suspension orally twice. She took the medication 3 and 5 h before the onset of her complaints. The drug was prescribed to her sister, who was admitted to the hospital due to nausea and vomiting. The patient had no history of illness or other medication use.

The patient was conscious, cooperative, and agitated on physical examination. Vital signs were within normal limits. We noticed involuntary muscle contractions in her hands, arms, and neck. Otherwise, the patient's neurological and systemic examinations were unremarkable. Blood chemistry, arterial blood gas, and complete blood count were also within the normal range.

We administered 3 mg biperiden, an anticholinergic, through slow intravenous infusion. The patient's dystonic reaction recovered 10 min after biperiden infusion. We observed her for the next 24 h for recurrence or complications, but she was completely normal after dystonia has resolved. One week later, she was admitted to the outpatient clinic for follow-up with no complaints. Her physical examination was normal.

Written informed consent was received from the patient's family to publish this case report.

DISCUSSION

Domperidone was considered a safe medication and used worldwide. Recent researches showed that domperidone is not as safe as we thought. Serious cardiovascular side effects of the intravenous form of domperidone were documented and withdrawn from the market in 1986.[4] New research stated that enteral forms could also cause cardiac arrhythmias and sudden cardiac death.[5] Therefore, the European Medicines Agency revealed a safety alert about domperidone in 2014, and restricted the use of domperidone to specific indications because of its cardiac side effects.[6] In 2019, domperidone was prohibited for using in patients younger than 12 years and weighing less than 35 kilograms in the UK.[7]

In one single-centered study for domperidone side effect profile, 44 (38.2%) out of 115 patients, who took domperidone for gastroparesis, had a side effect.[8] The most common side effects were headache (n:9), tachycardia (n:6), and palpitations (n:3). Syncope, prolonged QT interval, and death were reported in three patients separately. Neurological side effects such as anxiousness, disorientation and restlessness were also reported.

The CNS side effects are well documented for metoclopramide. Nearly 40% of patients who take metoclopramide experience some CNS side effects varying from somnolence to extrapyramidal symptoms such as tardive dyskinesia and parkinsonism.[9] Extrapyramidal side effects are not generally expected for domperidone because of its low blood-brain barrier penetration. Assumed CNS safety of domperidone is a major reason for preferring domperidone over metoclopramide, especially in children. In the literature, there are only a few adult case reports about dystonia after domperidone use.[10–13] Two recent case reports presenting children with dystonia after oral domperidone use were published from the USA and India.[14,15] Children recovered after discontinuation of domperidone, but recovery was in 1 and 7 days, respectively. No drug was given in either case. As we did in our case, anticholinergic drugs, like biperiden, can safely and rapidly reverse dystonic reactions.

Anticholinergic drugs are historically used for Parkinson's disease symptoms, movement disorders, and drug-induced extrapyramidal side effects.[16] Biperiden is one of the anticholinergic drugs and is commonly used for drug-induced dystonia.[17] Although drug-induced dystonia is usually reversible and self-limited, it is a cause of stress for patients and families. Therefore, rapid and safe recovery is crucial.

CONCLUSION

Oral forms of domperidone (suspension or blister) are widely prescribed worldwide and also in Turkey. Based on our literature search, we presented one of the few acute dystonia cases after domperidone use in children. To the best of our knowledge, our case is the first case report in children who was successfully and rapidly treated with anticholinergic, biperiden.

Physicians should be aware of possible rare, but severe extrapyramidal side effects as well as cardiac adverse effects, and assess the benefits and potential risks of domperidone before prescribing.

Statement

Informed Consent: Written, informed consent was obtained from the patient's family for the publication of thís case report.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SD, ÖE; Design – SD; Supervision – ÖE, RGSY; Resource – SD; Materials – SD; Data Collection and/or Processing – SD; Analysis and/or Interpretation – SD; Literature Search – SD; Writing – SD, RGSY; Critical Reviews – ÖE, RGSY.

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