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CASE REPORT

Metoclopramide-induced acute dystonic reaction: A case report

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ABSTRACT

Metoclopramide, a common antiemetic, is associated with extrapyramidal side effects. This case report describes a 19-year-old male with dengue fever who developed involuntary muscle contractions and respiratory distress two hours after receiving intravenous metoclopramide for nausea. Despite the rare incidence (0.2% of users), the patient exhibited severe extrapyramidal symptoms, which were managed with procyclidine. The case emphasizes the need for vigilance in monitoring patients receiving metoclopramide, as early recognition and treatment of such reactions are critical to prevent complications. Clinicians should be aware of these potential side effects when prescribing metoclopramide, especially in vulnerable populations.

Keywords: Metoclopramide, Dystonic Disorder, Adverse Effects.

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INTRODUCTION

Metoclopramide is a widely used antiemetic medication that acts as a dopamine receptor antagonist. The anti-emetic effect of metoclopramide stems from its antagonistic activity at D2 receptors within the chemoreceptor trigger zone of the central nervous system; this action inhibits nausea and vomiting induced by various stimuli.[1] Metoclopramide is associated with a range of extrapyramidal reactions, which are movement disorders resulting from the drug's action. This rare reaction affects only about 0.2% of individuals who use it daily.[2]

Metoclopramide can lead to extrapyramidal symptoms within the first 24 to 48 hours of administration. Most common symptoms include involuntary movements of the limbs, facial grimacing, twisting of the neck (torticollis), oculogyric crises, rhythmic tongue protrusion, speech difficulties of a bulbar nature, jaw stiffness (trismus), and opisthotonus. These rare cases may include stridor and difficulty breathing (dyspnea) due to laryngospasm.[3,4] The acute dystonic reaction is a sudden neurological disorder marked by involuntary muscle contractions in the larynx, pelvis, abdomen, neck, face, and limbs, manifesting in continuous or sporadic patterns, leading to repetitive movements and unusual postures.[5] Protrusion of the tongue, and Torticollis, Opisthotonus, oculogyric crisis, laryngospasm, and spasticity are signs of an acute dystonic reaction associated with metoclopramide that can occur hours to days after administering the medication.[6]

Although most incidents have been reported in developed nations, similar events have also been recorded in South Asia.[7] We reported a unique case of metoclopramide-induced acute dystonic reaction in a patient being treated for dengue fever at a tertiary care hospital in Karachi, Pakistan.

CASE REPORT

A 19-year-old boy presented to the department of Internal Medicine of Agha Khan Hospital, Karachi, Pakistan, on 5th January 2025 with complaints of fever and vomiting for the last 2 days. A relevant laboratory workup was done. Dengue NS1 turned out to be positive. The patient was admitted under internal medicine services for further management. During his hospital stay, he was managed along the lines of dengue fever with IV fluids. Platelets and hematocrit were monitored twice daily. The patient was observed for any bleeding. Symptomatic treatment for nausea and vomiting was done.

On the 2nd day of hospitalization, the patient developed a high-grade fever of 102^0 F associated

with four episodes of vomiting, for which intravenous metoclopramide was advised. After 2 hours of the administration, the patient developed abnormal jerking movements of the jaw associated with shortness of breath. As a result, the patient developed right-sided facial swelling, for which a maxillofacial surgeon was brought on board. The dystonic reaction produced by metoclopramide was treated with 5 mg of procyclidine administered intravenously. Two doses were administered, one at the time of the response and the second 12 hours later. As the dystonic reaction subsided with these two doses, procyclidine was subsequently discontinued. On account of the low platelet count, it was advised that the patient should manage conservatively with IV antibiotics and clinic follow-up. The patient also developed phlebitis at the injection site on the right arm, and conservative treatment was done by elevating the arm and continuous icing (Figure 1). The patient was discharged after two days on request with home treatment. The patient was advised to avoid metoclopramide and to have a follow-up after two days.

Table 1: Laboratory investigations of the patient

Hematological Parameters	Day 1 (12/10/24)	Day 3 (14/10/24)	Day 4 (15/10/24)
Hemoglobin(g/dl)	13.1	14.7	15.4
Hematocrit (%)	38.5	41.3	43.6
MCV (fL)	94.4	89.3	90
WBC (10^9/L)	3.2	4.8	10.0
Neutrophils (%)	75.9	59.7	20
Lymphocytes (%)	15.6	26.5	65
Platelet count(x10^9/L)	100	26	12
Dengue NS1antigen test	Positive		

MCV=mean corpuscular volume, NSI=nonstructural protein 1

Figure 1: Phlebitis at the injection site

DISCUSSION

Metoclopramide acts as a dopamine receptor antagonist in the central and peripheral nervous systems. In the medulla oblongata, metoclopramide blocks D2 receptors. This inhibition prevents the stimulation of the vomiting center, reducing vomiting, especially that induced by chemotherapy, toxins, or metabolic disturbances.[8] For the current case, this medication was prescribed to control the vomiting as the patient experienced four episodes of vomiting.

Acute dystonic reactions are a type of extrapyramidal side effect resulting from an imbalance between dopaminergic and cholinergic activity within the nigrostriatal pathway. These reactions can occur due to various medications, particularly those that act as dopamine antagonists. In the present case, metoclopramide, a class of antiemetics, was responsible for the onset of dystonic reaction.

Metoclopramide, the most frequently prescribed medication for nausea and vomiting, can lead to sudden dystonic reactions in individuals of any age, even when taken at recommended doses. The frequency of these side effects caused by metoclopramide is 2 out of 1000. However, in elderly and young patients, this frequency can increase to as much as 250 out of 1000.[5,6] Male gender and young age of 19 years make our patient have a marginally elevated risk of experiencing a dystonic reaction to metoclopramide compared to the general population.

The management of acute dystonia involves discontinuing the causative agent. Following this, treatment typically consists of administering anticholinergic agents or antihistamines. For instance, biperiden (5 mg) or procyclidine (5 mg) can be given intramuscularly (IM) or intravenously (IV), while benztropine (1-2 mg) and diphenhydramine (50 mg) are also effective options.[6] The intravenous route is preferred due to its rapid onset of action, with symptom relief usually occurring within 10 minutes.[4,8] In the current case, intravenous procyclidine 5mg was administered, and the dystonic reaction was controlled with its two doses.

If an oculogyric crisis occurs and does not respond to anticholinergics, clonazepam (0.5 to 4 mg) may be beneficial. After the acute symptoms have resolved, it is essential to continue with the treatment of the anticholinergics alongside any ongoing antipsychotic

therapy for at least 24 to 48 hours to prevent the recurrence of dystonia.[6] Our patient was treated with an intravenous dose of procyclidine (5 mg). A second dose was administered as a single dose did not sufficiently control the acute dystonic reaction. Improvement in extrapyramidal symptoms was observed after the second dose.

Based on this case report, nurses and doctors gained valuable insights into the importance of early identification and careful management of patients with fever and low platelet counts. The case highlighted the need to avoid invasive procedures such as intramuscular injections and reinforced the significance of monitoring for subtle signs of bleeding or adverse drug reactions. Healthcare professionals also recognized the importance of patient education regarding soft diets, maintaining proper hygiene while minimizing bleeding risks, and ensuring arm elevation and ice application to manage swelling. Most importantly, the case emphasized the need for multidisciplinary collaboration and timely follow-up to ensure safe and effective recovery.

CONCLUSION

Metoclopramide is widely used for the management of nausea and vomiting; however, it carries the risk of rare but serious adverse effects, such as acute dystonic reactions. These reactions can occur unpredictably—even after a single dose—and may pose life-threatening complications if not promptly recognized and treated. Timely administration of anticholinergic agents, either intravenously or intramuscularly, remains the most effective intervention.

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- **SR:** Received and reported the patient, clinical management, data recording, critical review while working at AKU as a nursing student
- **RR:** Managing Dengue at AKU, reported the dystonic reaction, manuscript drafting, critical review
- **FS:** Literature review, manuscript writing and final editing

All authors approved the final version to be published and agreed to be accountable for all aspects of the work, ensuring that any questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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