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Oral Metoclopramide-Induced Acute Dystonia in a 19-year-old Female: A Case Report

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Abstract—Background*: Metoclopramide, a dopamine receptor antagonist commonly utilised as an antiemetic and prokinetic agent, is linked with extrapyramidal symptoms that can range from acute dystonia to tardive dyskinesia. We report a 19-year-old female who developed acute dystonia within a day of taking 10 mg oral metoclopramide for peptic ulcer management.* ***Case presentation:*** *The patient presented with an uncontrolled protrusion of her tongue. At presentation, her blood pressure and heart rate were elevated. A full blood count and renal function tests were normal, while urine pregnancy testing was negative. Following the discontinuation of metoclopramide and the initiation of the anticholinergic benztropine, her acute dystonic symptoms subsided, and she was subsequently discharged on benztropine and baclofen oral tablets.* ***Conclusion:*** *This case highlights the importance of recognising metoclopramide-induced extrapyramidal symptoms even after a single low-dose exposure, especially in young adults, emphasising the need for prompt anticholinergic treatment.*

Keywords— *Acute dystonia; anticholinergics; extrapyramidal symptoms; metoclopramide; tardive dyskinesia.*

I. Introduction

In clinical practice, many medications, including antiemetics, antipsychotics, anticonvulsants, and antiarrhythmic agents, mostly described as dopamine receptor-blocking agents (DRBAs), have the side effect of causing movement problems known as extrapyramidal symptoms (EPS) [1]. Metoclopramide, an antiemetic and prokinetic agent, is widely prescribed for nausea, vomiting, and gastroparesis [2]. The mechanism of action of metoclopramide involves the blockade of dopamine receptors, mostly at high doses, and serotonin receptors in the chemoreceptor trigger zone of the central nervous system. Metoclopramide also sensitises tissues to acetylcholine, increases upper gastrointestinal motility but not secretions, and increases lower oesophageal sphincter tone [3]. Despite the clinical usefulness of metoclopramide, including its use in chemotherapy-induced nausea and vomiting, its central dopamine D2-receptor blockade in the basal ganglia can precipitate extrapyramidal side effects (EPS) [4].

Acute dystonic reactions typically occur within the first 24-48 hours of exposure to metoclopramide, are more frequent in females and younger patients (below 30 years) [5], and are reported in about 0.2-1% of patients receiving the drug intravenously [6]. Although usually self-limited or easily reversed, these reactions can be distressing for patients and their caregivers. Acute dystonic reactions may lead to misdiagnosis as seizures, tetanus, or psychiatric emergencies on the part of clinicians [6,7]. We report a clinical case of a patient who received oral metoclopramide as part of peptic ulcer treatment and developed EPS in the form of acute dystonic reactions.

II. Case Presentation

Our patient was a 19-year-old female high school student with no significant medical history before presentation to the emergency centre of a tertiary healthcare facility. Three days before the presentation, she started experiencing abdominal pain and vomiting. She was sent to a primary healthcare facility, where she was managed for peptic ulceration with oral metoclopramide 10 mg twice daily for five days, oral omeprazole 20 mg twice daily for seven days, and oral magnesium trisilicate 15 ml three times daily for seven days as an outpatient. A day after starting the peptic ulceration treatment, she had an uncontrolled protrusion of her tongue, which led to difficulty in speech and a painful tongue, for which she was brought to our facility for further management.

After admission and on direct questioning, there was no fever, headache, or dizziness. Upon examination, she had a body temperature of 35.6°C, blood pressure of 149/110 mmHg (elevated), heart rate of 130 bpm (tachycardia), and respiratory rate of 15 cpm. Her SpO2 remained at 98% throughout her hospital stay (Table 1). She weighed 56 kg and was 1.56 m tall. She had no respiratory distress and was stable with no jaundice or pallor, and was conscious and alert, with normal mobility. The patient was very anxious and had intermittent repetitive protrusion and twisting movements of the tongue with no swelling, bleeding or fasciculations. At times, she was pushing her tongue against the inside wall of her cheek. The patient was not on any long-term medications, had no known food or drug allergies, had no history of seizure disorders, and her complaint was happening for the first time.

The Naranjo Adverse Drug Reaction Probability Scale was used to assess causality [8]. With a score of 7, it was a Probable Adverse Drug Reaction (ADR) due to oral metoclopramide

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use, as the patient was taking oral magnesium trisilicate, omeprazole, and metoclopramide at the time of the ADR. Using reputable drug interaction databases like Medscape and British National Formulary (BNF) March 2026 (version 3.2.39, 474), a comprehensive assessment of possible drug-drug interactions among these drugs was carried out. No clinically meaningful interactions between these drugs were found during this assessment.

The patient was diagnosed with metoclopramide-induced tardive dyskinesia with a differential diagnosis of neuroleptic malignant syndrome. Upon admission, the oral metoclopramide was held, and the patient was initiated on intravenous (IV) benztropine 1 mg three times daily, IV dextrose 5% in sodium chloride 0.9% 1.5 L daily, and IV Ringer's lactate 500ml stat. A full blood count and renal function tests were requested, and all results were within the normal ranges when received (Table 2). A urine pregnancy test was done, which came back negative.

On the second day of admission, the blood pressure dropped to 111/67 mmHg, the heart rate to 98 bpm, and the respiratory rate increased to 18 cpm. The presenting symptom of uncontrolled tongue protrusion had subsided, and she was subsequently discharged on oral benztropine 1 mg three times daily for 7 days and oral baclofen 5 mg three times daily for 7 days. Over the course of a 7-day review, the patient showed no signs of involuntary tongue movement.

TABLE I. Relevant Vital Signs

Vital Sign	Admission Day 1	Admission Day 2
Body temperature (ºC)	35.6	35.7
Blood pressure (mmHg)	149/110	111/67
Respiratory rate (cpm)	15	18
Heart rate (bpm)	130	94
SpO_2	98% on room air	98% on room air
Glasgow Coma Scale	15/15	15/15

SpO2, saturated pressure of oxygen

TABLE 2. Laboratory investigations

Test	Result	Reference range	Unit	Comment
Creatinine	112.0	52.0-123.0	µmol/L	Normal
Urea	8.06	1.70-8.30	mmol/L	Normal
Sodium	139.6	135.0-150.0	mmol/L	Normal
Potassium	5.4	3.6-5.5	mmol/L	Normal
Chloride	100.6	96.0-108.0	mmol/L	Normal
White blood cell	8.06	3.50-9.50 × 10^9	L	Normal
Lymphocytes #	3.110	1.100-3.200× 10^9	L	Normal
Monocytes #	0.597	0.100-0.600× 10^9	L	Normal
Neutrophils #	5.219	1.800-6.300× 10^9	L	Normal
Eosinophils #	0.027	0.020-0.520× 10^9	L	Normal
Basophils #	0.007	0.000-0.060× 10^9	L	Normal
Red blood cell	4.99	3.50-5.10× 10^{12}	L	Normal
Haemoglobin	14.3	11.0-16.0	g/dL	Normal
Hematocrit	38.8	35.0-45.0%	-	Normal
MCV	85.4	82.0-100	fL	Normal
MCH	28.9	27.0-34.0	pg	Normal
MCHC	33.4	32-35	g/dL	Normal
Platelet	236	150-400× 10^9	L	Normal

#, number; MCV, mean cell volume; MCH, mean corpuscular haemoglobin; MCHC, mean corpuscular haemoglobin concentration.

III. Discussion

This case highlights a preventable ADR in a low- and middle-income country (LMIC). Acute dystonia is a neurological hyperkinetic movement disorder in which sustained or repetitive muscle contractions occur involuntarily, resulting in twisting and repetitive movements or abnormal fixed posture, which may resemble a tremor [7]. Although the working diagnosis was metoclopramide-induced tardive dyskinesia, the ultra-rapid onset, isolated lingual dystonia, preserved consciousness, normal laboratory results, and complete resolution of symptoms within 48 hours after anticholinergic therapy are pathognomonic of an acute dystonic reaction rather than true tardive dyskinesia [4]. Tardive dyskinesia rather has a late-onset, often characterised by persistent hyperkinetic disorder that requires cumulative exposure of at least several months and rarely reverses promptly upon drug withdrawal [1,4]. Immediate resolution of acute dystonia usually occurs after discontinuation of DRBAs or treatment with anticholinergics, but not in tardive dyskinesia [9]. The spectrum of clinical manifestations of acute dystonia includes repeated protrusion of the tongue (present in the current case), bulbar type of speech, facial grimacing, twisting of the neck, oculogyric crisis, lockjaw, opisthotonus, involuntary limb movements, and, rarely, stridor and dyspnea due to laryngospasm [1,6,7].

Existing literature on the clinical presentation of EPS describes two mechanistically distinct syndromes. An acute EPS in the form of dystonia, akathisia, and Parkinsonism are due to a rapid dopaminergic-cholinergic imbalance, whereas chronic EPS like tardive dyskinesia is due to chronic receptor adaptation and excitotoxicity [10]. Metoclopramide, a central and peripheral dopamine D2-receptor antagonist, precipitates acute EPS by disrupting nigrostriatal balance and causing relative cholinergic overactivity due to increased acetylcholine release relative to dopamine. This mechanism is the cause of common EPS such as acute dystonia, tardive dyskinesia, akathisia, and drug-induced Parkinsonism [1,5]. Also, lingual dystonia with protrusion is a classic manifestation in younger patients and can mimic seizures, Wilson's disease, conversion disorder, encephalitis, hypomagnesemia, hypocalcemia, or tetanus, an infection with high morbidity and mortality in LMICs [1,6]. These differential diagnoses were excluded in the present case by virtue of the history of the presenting complaints, normal laboratory findings, and rapid pharmacological reversal. Invariably, risk factors present in our patient, such as female sex, age below 30 years [5], and even short-term oral dosing, align with established epidemiology [6], where acute EPS occurs in 0.2% of general users but up to 25% of children and adolescents [1,6]. Similar tongue-protrusion dystonia after a single metoclopramide dose was recently reported in a 15-year-old girl who responded fully to oral diphenhydramine within 8 hours [1].

A recent systematic review and meta-analysis focused on EPS associated with parenteral use of metoclopramide [11]. The incidence of EPS among metoclopramide-treated gastroparesis patients was only 0.37% (159.4 per 100,000 person-years), far below the 1-15% cited in older guidelines, with no independent association after adjustment for confounders [12]. However, higher rates of acute dystonia and tardive dyskinesia remain linked to female sex, older age, diabetes mellitus, and prolonged use. This case, therefore, serves as a reminder that

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acute dystonia, not just chronic tardive dyskinesia, remains clinically relevant even with brief exposure and oral administration [4].

In our patient, the use of intravenous benztropine 1 mg thrice daily promptly abolished dystonia, while adjunctive oral baclofen on discharge addressed residual stiffness, an approach consistent with current reversal strategies [1]. Standard of care in acute dystonia involves discontinuation of the suspected causative agent and treatment with an anticholinergic drug or an antihistamine. Benztropine, diphenhydramine, and chlorpheniramine are reported to be effective in acute dystonia treatment [7]. The transient high blood pressure and tachycardia on admission likely reflected anxiety and pain rather than neuroleptic malignant syndrome [1,7]. In LMICs, where metoclopramide is still widely prescribed for nausea and vomiting, heightened awareness, patient education, and preference for serotonin 5-hydroxytryptamine type 3 (5-HT3) receptor antagonists such as ondansetron, granisetron, palonosetron, and dolasetron in young females could prevent similar future episodes [11,12].

This clinical case presentation reinforces the black-box warning for metoclopramide while underscoring the need to differentiate acute dystonia from tardive dyskinesia for accurate reporting and management [13] due to the anxiety it creates for patients and their caregivers [1]. Short-term use of metoclopramide in female adolescents and young adults should be avoided unless no safer alternative exists, with anticholinergics and antihistamines kept immediately available, as a critical emergency can arise if pharyngeal or laryngeal muscles are involved [14].

IV. Conclusion

Metoclopramide-induced acute extrapyramidal symptoms, mainly dystonic reactions, remain a clinically significant adverse effect despite their relative rarity. Clinicians should maintain a high level of suspicion, educate patients about warning signs, and have anticholinergic agents readily available. Alternative antiemetics should be considered as first-line options for young adults and women of childbearing age.

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