



## Case Report

## Metoclopramide induced acute dystonic reaction: A case report

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## ABSTRACT

**Introduction:** and Importance: Metoclopramide is a frequently used anti-emetic medication for the treatment of vomiting secondary to medical conditions or chemotherapy. Metoclopramide is known to cause extrapyramidal symptoms (drug-induced movement disorder). While the dystonic reaction is an acute condition that may emerge after a single dose of metoclopramide, Tardive dyskinesia and Parkinsonism are generally seen after prolonged use. These reactions are more frequent in patients receiving high doses of metoclopramide especially in female patients, children, and older patients.

**Case presentation:** A 61-year-old male hypertensive patient was admitted into the internal medicine ward following persistent epigastric pain and vomiting. Initial laboratory and imaging assessments were insignificant, Upper GI endoscopy revealed features of gastritis. PPI and metoclopramide 10 mg 3 times daily were started. After 2 days, the patient developed an acute dystonic reaction. The drug was discontinued and anticholinergic biperiden was given. The dystonic reaction was controlled after the third dose. The patient was discharged following recovery.

**Conclusion:** Metoclopramide can cause unpredictable acute dystonic reactions. This can be life-threatening and should be detected early. Extrapyramidal side effects should be monitored in patients on metoclopramide since a single dose can cause these symptoms. This case highlights an acute dystonic reaction following the administration of a metoclopramide injection.

**Highlights:** A 61-year old man became sensitive to Metoclopramide administration. He developed an acute dystonic reaction following the administration of a metoclopramide injection. He was treated with biperiden 5 mg IV after the condition was diagnosed, and he responded well.

## 1. Introduction and importance

The acute dystonic response is an acute neurological condition characterized by involuntary contractions of muscles in the extremities, face, neck, abdominal, pelvis, or larynx that occur in either persistent or intermittent rhythms, resulting in repetitive jerks and abnormal posture [1]. This condition is attributed to a number of drugs. One of the most frequent medications associated with this condition is metoclopramide. Extrapyramidal symptoms related to metoclopramide are encountered by about 0.2% of people receiving 30–40 mg of metoclopramide per day. If a comprehensive medication history is not obtained, the condition may be misdiagnosed with other diseases like tetanus, strychnine poisoning, hypocalcemia, hypomagnesemia, focal seizures, or other primary neurological causes such as Wilson's disease [2].

Symptoms of a metoclopramide-related acute dystonic reaction may emerge within hours to days after administration of the medication and may include oculogyric crisis, torticollis, opisthotonus, tongue

protrusion, laryngospasm, and spasticity [3]. Here we present a case of metoclopramide induced acute dystonic reaction in the second day of drug administration.

## 2. Case presentation

A 61-year-old hypertensive patient was admitted to the internal medicine ward after he developed persistent epigastric pain and vomiting. His initial laboratory and radiologic investigations were normal. Upper GI endoscopy showed features of gastritis. The patient was treated conservatively with PPI, Metoclopramide 10 mg 3 times daily, and IV fluids. On the second day, the patient developed generalized muscle spasticity, involuntary extremity movement, rhythmic tongue protrusion, and dysarthria. Neurologic consultation was requested. On neurologic examination, the patient was conscious, had tongue drooling, generalized body spasticity including neck muscles, and paroxysmal extremity involuntary movement. No focal or lateralizing deficits were

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seen. Likewise, cranial nerve examination, including pupillary reaction, was normal. Vital signs, including blood pressure, pulse rate, respiratory rate, and body temperature, were normal. A brain MRI immediately afterward did not reveal any acute cerebral pathology (see Figs. 1 and 2). The characteristic history of metoclopramide exposure along with the exclusion of acute cerebral pathology, a diagnosis of metoclopramide-induced acute dystonic reaction was made, and metoclopramide was discontinued. A biperiden (5 mg) IV was instituted 3 times. After the third dose, the patient's condition improved, and the symptoms of the dystonic reaction completely disappeared. After clinical improvement, he was discharged and advised to avoid preparations containing metoclopramide.

### 3. Clinical discussion

Metoclopramide is the most widely prescribed antiemetic because of its antiemetic and prokinetic properties. Metoclopramide promotes muscular contractions in the upper digestive tract, leading to increased gastric emptying and motility. Metoclopramide acts by blocking dopamine D2 and serotonin 5-HT<sub>3</sub> receptors in the chemoreceptor trigger zone (CTZ), which is located in the area of the postrema of the brain. Administration of this drug leads to prokinetic effects which are mediated by inhibitory actions on presynaptic and postsynaptic D2 receptors, agonism of serotonin 5-HT<sub>4</sub> receptors, and antagonism of muscarinic receptor blockage. This action increases acetylcholine release, resulting in enhanced LES and gastric tone, which speeds up gastric emptying and movement into the gut [4].

Symptomatic treatment of both acute and recurring peptic ulcer disease, diabetic gastroparesis, and gastroesophageal reflux disease (GERD) are among the indications for metoclopramide. It's also used to prevent vomiting caused by emetogenic chemotherapy, as well as nausea and vomiting after surgery [5]. Extrapyramidal reactions are the most common acute side effect of metoclopramide, with a reported frequency of 0.2%, but this incidence can rise to as high as 25% in the elderly and young. In the developing world, despite high rates of prescription, very little research has been done on metoclopramide-induced acute dystonic reaction or extrapyramidal side effects. The incidence of this condition is underreported due to lack of data collection and less

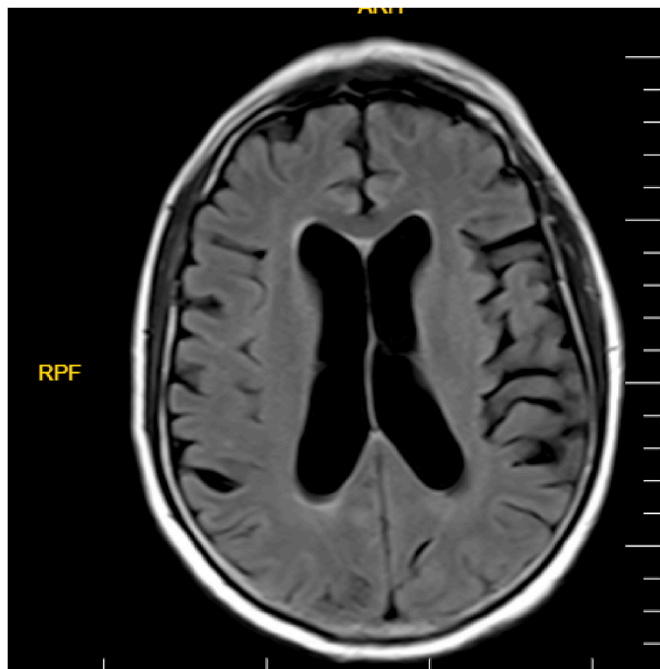


Fig. 1. Brain MRI FLAIR sequence.

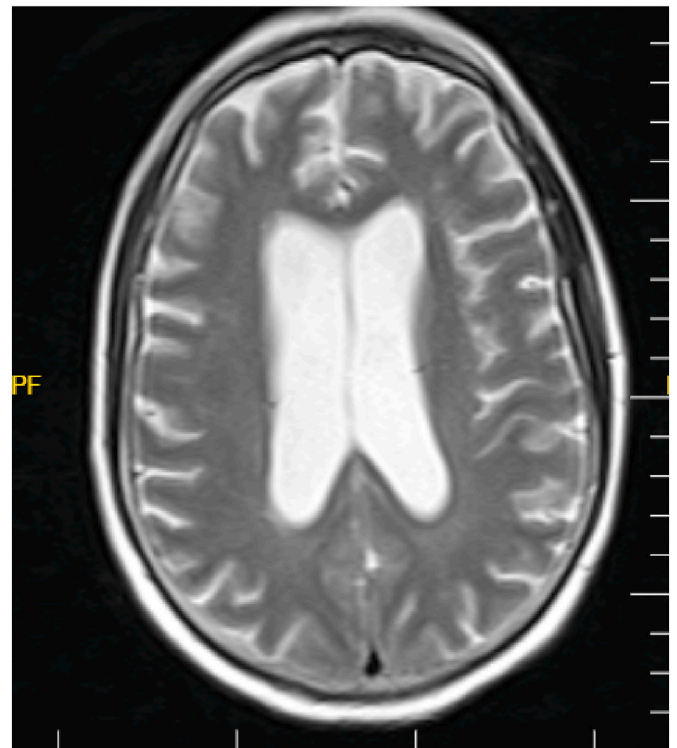


Fig. 2. Brain MRI T2 sequence.

reporting of cases in these settings. Long-term use, female sex, older age, diabetes mellitus, and polypharmacy are all identified risk factors for developing a metoclopramide-induced dystonic reaction [6]. Our patient was a 61-year-old male. Regarding his age, he had a slightly increased risk of having an acute dystonic reaction to metoclopramide, which occurred on the second day of the drug administration.

Symptoms of a metoclopramide-induced dystonic reaction include involuntary limb movement, generalized body stiffness, slurred speech, trismus, torticollis, and oculogyric crises, which can occur hours to days after the medication is delivered [7]. On the second day of metoclopramide administration, our patient developed acute dystonic reaction, including generalized body spasticity, involuntary limb movement, slurred speech, and rhythmic protrusion of the tongue.

The treatment of a metoclopramide-induced acute dystonic reaction involves stopping the offending drug immediately and administering medications for reversal of the condition. These include administering anticholinergics or antihistamines intravenously or intramuscularly, most commonly biperiden, benztropine, or diphenhydramine [8]. Intravenous administration is always recommended because of its fast action, with signs and symptoms fading within 10 minutes, but if intravenous access is challenging, intramuscular administration is another option. If extrapyramidal symptoms do not improve, a second or third dose may be necessary [9]. We treated our patient with intravenous Biperiden 5 mg. A single dose was not enough to control the acute dystonic reaction, so we administered the second and third doses. After the third dose, the extrapyramidal symptoms disappeared. The patient and his family were informed about the side effects of the drug and were advised to be vigilant regarding metoclopramide use.

### 4. Conclusion

Metoclopramide can cause an unpredictable acute dystonic reaction. This can be life-threatening and should be diagnosed early. Extrapyramidal side effects should be monitored in all patients on metoclopramide since a single dose can trigger an abrupt acute dystonic reaction.

**Ethical approval**

Ethical approval is not required for case reports in our institution. However, written informed consent was obtained from the patient for publication of this case report and the accompanying image.

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**Author contribution**

MAN involved in patient care, collected data, and performed a literature review. MSH performed literature, wrote the manuscript and also contributed to the patient care. All authors reviewed and approved the final version for submission.

**Guarantor**

Mohamed Sheikh Hassan, the corresponding author

**Consent for publication**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Availability of data and materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

**Provenance and peer review**

Not commissioned, externally peer-reviewed.

**Declaration of competing interest**

The authors declare no conflict of interest.

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.103248>.

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