

A subtle mimicker in emergency department

Illustrated case reports of acute drug-induced dystonia

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Abstract

Background: Movement disorder emergencies include any movement disorder which develops over hours to days, in which failure to appropriately diagnose and manage can result in patient morbidity or mortality.

Movement disorder emergencies include acute dystonia: sustained or intermittent muscle contractions causing abnormal, often repetitive, movements. Acute dystonia is a serious challenge for emergency room doctors and neurologists, because of the high probability of misdiagnosis, due to the presence of several mimickers including partial seizures, meningitis, localized tetanus, serum electrolyte level abnormalities, strychnine poisoning, angioedema, malingering, catatonia, and conversion.

Methods: We describe 2 examples, accompanied by videos, of acute drug-induced oro-mandibular dystonia, both subsequent to occasional haloperidol intake.

Results: Management and treatment of this movement disorder are often difficult: neuroleptics withdrawal, treatment with benzodiazepines, and anticholinergics are recommended.

Conclusion: Alternative treatment options are also discussed.

Abbreviations: CT=computerized tomography, ER=emergency room, MRI=magnetic resonance imaging.

Keywords: acute drug-induced dystonia, anticholinergics, benzodiazepines, haloperidol

1. Introduction

Movement disorder emergencies include any movement disorder which develops over hours to days, in which failure to appropriately diagnose and manage can result in patient morbidity or mortality.^[1] Movement disorder emergencies include neuroleptic malignant syndrome, lethal catatonia, serotonin syndrome, malignant hyperthermia, hyperekplexia, chorea, ballism or myoclonus, parkinsonism including acute akinesia in Parkinson's disease, and dystonia.^[2]

Dystonia is classified as a movement disorder characterized by sustained or intermittent muscle contractions causing abnormal, often repetitive, movements, postures, or both.^[3] Etiology includes inherited, acquired, or idiopathic dystonia.^[3] One of the most common form of acquired dystonia is the drug-induced form, classified as acute or tardive.

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We report 2 cases of acute haloperidol-induced dystonia of the tongue and masseter.

Acute dystonia recognizes several mimickers, including partial seizures, meningitis, localized tetanus, electrolyte disturbances, strychnine poisoning, angioedema, simulation, catatonia, and conversion.

Acute dystonia, therefore, represents a serious challenge for emergency room (ER) doctors and neurologists, because of the high probability of misdiagnosis, which may delay intervention.

All interventions given were part of normal health care, and thus ethical approval was not necessary. We obtained informed consent from patients for using their clinical data for publication and teaching purposes.^[2]

2. Case reports

2.1. Case 1

A 49-year-old white woman was referred to the ER with severe involuntary and highly distressing sustained tongue protrusion.

Oral examination revealed sustained and involuntary protrusion of a turgid and purplish tongue, speech, and swallowing difficulties. The patient was unable to retract her tongue back into her mouth. After 2 or 3 minutes, masseter involuntary contraction dystonia appeared with gnashing of teeth and involuntary forced jaw closure. The masseter contraction caused tongue biting resulting in a wound on the center of the patient tongue, which required suture. The symptoms disappeared within 5 minutes but recurred 5 minutes later. Between 2 contractions the patient was able to push out-pull in her tongue with moderate difficulty and she was able to speak. These clinical features recurred several times during observation (see Video 1, Supplemental Video, which illustrates tongue dystonia, <http://links.lww.com/MD/B357>).

Eighteen months before she had presented a similar episode interpreted as tongue angioedema, spontaneously resolved.

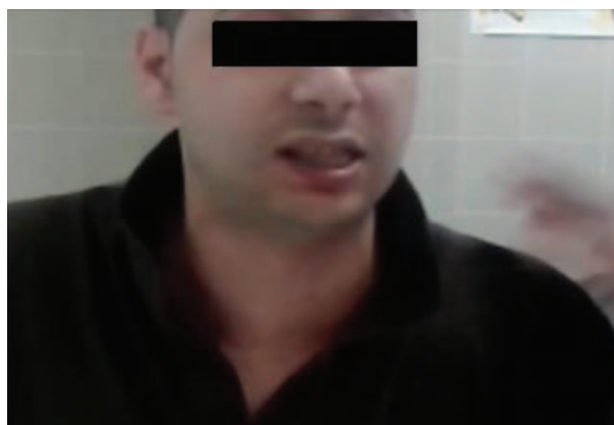


Figure 1. A 29-year-old man referred to the ER with painful and involuntary masseter muscles spasms with gnashing of teeth after haloperidol intake. ER= emergency room.



Figure 2. Persistent involuntary jaw closure of the same patient in Fig. 1.

She had no history of recent head or neck injury, substance abuse, or infection. She has always been in good physical health and she had no evidence of any chronic neurological disorder. She was not taking any pharmacological treatment. She had no family history of major illness, except for her mother's psychosis. In particular, there was no family history of movement disorder.

During the ER assessment, there was no evidence of seizures, fever, or vomit. She had no urticaria or skin swellings. Neurological examination was normal except for dystonic contraction of the masseter muscles.

Routine biochemistry, hematological blood examination (complete blood count, creatine phosphokinase, liver and kidney function, electrolytes), computerized tomography (CT), and magnetic resonance imaging (MRI) brain scan were normal.

Her clinical presentation was interpreted as dystonia and was successfully treated with diazepam 10 mg i.v. Dystonia was not observed throughout the following clinical monitoring. Only the day after admission, the patient revealed that a few hours before the onset of tongue contraction, she had felt anxious and had taken unspecified dosage of haloperidol prescribed to her mother. She also reported to have taken haloperidol a few hours before the onset of the previous episode of tongue protrusion which occurred 1 year before and which was misdiagnosed as tongue angioedema.

2.2. Case 2

A 29-year-old man affected by anxious depressive syndrome, referred to the ER with painful and involuntary masseter muscles spasms with gnashing of teeth and involuntary jaw closure (Figs. 11 and 22). During the 3 hours before admission to the ER, he had experienced more than 10 episodes, each lasting about 1 to 3 minutes. The patient appeared scared, agitated, and aggressive against those who approached him. In the previous days, the patient was reported by family members to have experienced paranoid delusions, in particular persecutory type. The patient believed that a harmful microchip had been implanted in his brain. Therefore, in the 24 hours prior to ER admission, he had taken haloperidol (2%, 10+10+30 drops), prescribed by the psychiatrist for anxiety and depression. Routine blood examination and cerebral CT scan were normal. The symptom, initially interpreted as somatic disorder, was diagnosed as acute drug-induced dystonia, haloperidol was withdrawn and treatment

with diazepam 10 mg i.v. and chlorhydrate-biperiden 4 mg was initiated, with complete resolution of dystonic symptoms. The patient was discharged and prescribed with a prophylactic oral anticholinergic therapy (chlorhydrate-biperiden 4 mg) for 7 days in a tapering dose.

3. Discussion

Acute dystonia is a serious challenge for ER doctors and neurologists, because of the high probability of misdiagnosis. We describe 2 examples of acute drug-induced oro-mandibular dystonia, both subsequent to occasional haloperidol intake.

The causative drugs are commonly antidopaminergic, not restricted to the "classic" neuroleptics, but also risperidone, olanzapine, and antiemetics. Clozapine is the only known atypical antipsychotic drug that does not induce acute dystonia.^[4] Less frequently, anticonvulsivants, antidepressant, anti-vertigo, and antimalaria agents are involved. Dystonia can occur even after a single dose, over the course of several days of therapy, after dose increase or as a manifestation of overdose.^[5] Approximately 10% of acute dystonia appears in a few hours after treatment initiation, 90% during the first 3 days of treatment with the causative agent.

Clinical presentation commonly includes craniocervical distribution with intermittent or prolonged contraction of sternocleidomastoid muscle (spasmodic torticollis), or masseter and lingual muscle, laryngospasm, blepharospasm, oculogyric crisis, and contraction of the dorsal muscle (opisthotonus).

There is a tendency toward higher frequency of dystonia in males than in females, and in younger than in older patients.^[6] Young male patients treated with high-dose of high-potency neuroleptic drug represent 40% of the acute dystonia cases. Hypokalemia, dehydration, hypocalcaemia, hypoparathyroidism, previous similar episodes, recent use of cocaine are risk factors for the occurrence of an acute movement disorder.

The differential diagnoses of acute dystonia include other neurological and systemic disorder, such as partial seizures,^[7] meningitis, localized tetanus, serum electrolyte level abnormalities, strychnine poisoning, angioedema, simulation, catatonia, and conversion.

The pathophysiological mechanism is still unknown. The hypothesized mechanism is a hyperactivity of dopaminergic

Table 1
Treatment of life-threatening acute dystonia.^[2,10,11]

Class	Drug	Onset of action	Dosage
Benzodiazepines	<i>Diazepam</i>	IV 3–15 min	5–10 mg IV bolus repeated at regular intervals
	<i>Clonazepam</i>	(in the mild case)	2 mg PO
Anticholinergics (after the dystonia has resolved, the dose should be reduced gradually in 4–7 days)*	<i>Biperiden</i>	IM/IV within 20 min	2.5–5 mg IM/IV
	<i>Procyclidine</i>	IM/IV: within 20 min	5–10 mg IV bolus repeated in 20 min (max. dose 20 mg)
Antihistamines	<i>Benztropine</i>	IM/IV: within 20 min orally (PO): within 1 h	IM/IV/PO 0.02–0.05 mg/kg per dose
	<i>Promethazine</i>	IV 3–5 min PO, IM 20 min	0.25–1 mg/kg per dose (maximum, 50 mg)
	<i>Hydroxyzine</i>	15–60 min	0.5–1 mg/kg per dose IM/PO
	<i>Diphenhydramine</i>	Within 1 h	IV/IM 1–2 mg/kg PO: 5 mg/kg per day every 6–8 h

IM=Intramuscular administration, usually effective within 20 min. If it is not effective, second or third injections may be necessary; these should be administered at half hour intervals, IV=Intravenous administration, necessary only if acute dystonia is life threatening, PO= per os.

transmission in the basal ganglia, which occurs during reduction of blood drug concentration.^[8] It has also been suggested that blockade of D2 receptors in the caudate, putamen, and globus pallidus is partly responsible for the occurrence of acute dystonia.^[9]

Management and treatment are often difficult, being ineffective in many cases. Neuroleptics withdrawal and prompt treatment with benzodiazepines (clonazepam or diazepam) and anticholinergics (such as chlorhydrate-biperiden) are recommended. Other treatment options include benztropine and antihistamines, such as promethazine and diphenidramine, or tetrabenazine and trihexyphenidyl (Table 1). Amantadine is an alternative drug in dystonia prophylaxis when anticholinergic drugs are not tolerated, but care should be taken in pediatric population.^[10]

These cases illustrate the presentation of acute drug-induced oro-mandibular dystonia and suggest the possibility of misdiagnosis, which may delay intervention. In the management of acute dystonia, a high level of clinical suspicion is crucial and an accurate drug history is necessary.

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