

# Catatonia: Recognition, management, and prevention of complications

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**M**r. W, age 50, who has been diagnosed with hypertension and catatonia associated with schizophrenia, is brought to the emergency department by his case manager for evaluation of increasing disorganization, inability to function, and nonadherence to medications. He has not been bathing, eating, or drinking. During the admission interview, he is mute, and is noted to have purposeless activity, alternating between rocking from leg to leg to pacing in circles. At times Mr. W holds a rigid, prayer-type posture with his arms. Negativism is present, primarily opposition to interviewer requests.

Previously stable on paliperidone palmitate, 234 mg IM monthly, Mr. W has refused his past 3 injections. Past psychotropics include clozapine, 250 mg at bedtime (discontinued because Mr. W was repeatedly nonadherent to blood draws), risperidone long-acting injection, 25 mg every 2 weeks, as well as olanzapine, quetiapine, lurasidone, asenapine, lithium, fluoxetine, citalopram, mirtazapine (doses unknown). Previously, electroconvulsive therapy (ECT) was used to successfully treat his catatonia.

On the inpatient psychiatry unit, Mr. W continues to be mute, staying in bed except to use the bathroom. He refuses all food

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#### Disclosures

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and fluids. The team initiates subcutaneous enoxaparin for deep vein thrombosis (DVT) prophylaxis and IV fluids for hydration. Mr. W receives a benzodiazepine challenge with lorazepam, 2 mg IM. Within 1 hour of receiving lorazepam, he is walking in the hall, speaking to staff, and eating. Therefore, lorazepam, 2 mg IM, 3 times a day, is continued, but the response is unsustainable. Ultimately, ECT is initiated.


Catatonia may be present in 10% to 20% of psychiatric inpatients.<sup>1,2</sup> Both stuporous and hyperexcitable catatonia have been described. Catatonia can be associated with schizophrenia, mood disorders, autism spectrum disorders, delirium, or medical comorbidities, and it can be secondary to benzodiazepine withdrawal or clozapine withdrawal.<sup>1-3</sup> Neuroleptic malignant syndrome (NMS) should be ruled out patients with suspected catatonia because some NMS symptoms are similar to catatonic symptoms. The Woodbury Stages of NMS suggest Stage II drug-induced catatonia is a

#### Practice Points

- Initiate appropriate measures to **reduce the risk of medical complications from catatonia**, such as deep vein thrombosis and dehydration.
- **A parenteral lorazepam challenge is considered first-line therapy** for catatonia and is useful in confirming the diagnosis.
- **Implement electroconvulsive therapy** as soon as it is clear that pharmacotherapy is less than fully effective.



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## Clinical Point

**Benzodiazepines are a first-line option for the management of catatonia**

precursor to NMS.<sup>4</sup> Malignant (lethal) catatonia also closely resembles NMS, and some consider NMS a variant of malignant catatonia or drug-induced catatonia.<sup>2,5</sup> Malignant features include fever, tachycardia, elevated blood pressure, and autonomic instability, which can be life-threatening.<sup>1,2,5</sup> Tools such as the Bush-Francis Catatonia Rating Scale<sup>6</sup> or the Northoff Catatonia Scale are useful in evaluating symptoms of catatonia.<sup>2,6</sup> *Table 1*<sup>3,6</sup> (page 47) outlines the symptoms and diagnosis of catatonia.

### Medical complications can be fatal

Catatonia is associated with multiple medical complications that can result in death if unrecognized or unmanaged (*Table 2*,<sup>1,2,7</sup> page 48). Lack of movement increases the risk of thromboembolism, contractures, and pressure ulcers. Additionally, limited food and fluid intake increases the risk of dehydration, electrolyte disturbances, and weight loss. Prophylaxis against these complications include IV fluids, DVT prophylaxis with heparin or low-molecular weight heparin, or initiation of a feeding tube if indicated.

### Treatment usually starts with lorazepam

**Benzodiazepines** are a first-line option for the management of catatonia.<sup>2,5</sup> Controversy exists as to effectiveness of different routes of administration. Generally, IV lorazepam is preferred due to its ease of administration, fast onset, and longer duration of action.<sup>1</sup> Some inpatient psychiatric units are unable to administer IV benzodiazepines; in these scenarios, IM administration is preferred to oral benzodiazepines.

The initial lorazepam challenge dose should be 2 mg. A positive response to the lorazepam challenge often confirms the catatonia diagnosis.<sup>2,7</sup> This challenge should be followed by maintenance doses ranging from 6 to 8 mg/d in divided doses (3 or 4 times a day). Higher doses (up to 24 mg/d) are sometimes used.<sup>2,5,8</sup> A recent case report described catatonia remission using

lorazepam, 28 mg/d, after unsuccessful ECT.<sup>9</sup> The lorazepam dose prior to ECT was 8 mg/d.<sup>9</sup> Response is usually seen within 3 to 7 days of an adequate dose.<sup>2,8</sup> Parenteral lorazepam typically is continued for several days before converting to oral lorazepam.<sup>1</sup> Approximately 70% to 80% of patients with catatonia will show improvement in symptoms with lorazepam.<sup>2,7,8</sup>

The optimal duration of benzodiazepine treatment is unclear.<sup>2</sup> In some cases, once remission of the underlying illness is achieved, benzodiazepines are discontinued.<sup>2</sup> However, in other cases, symptoms of catatonia may emerge when lorazepam is tapered, therefore suggesting the need for a longer duration of treatment.<sup>2</sup> Despite this high rate of improvement, many patients ultimately receive ECT due to unsustained response or to prevent future episodes of catatonia.

A recent review of 60 Turkish patients with catatonia found 91.7% (n = 55) received oral lorazepam (up to 15 mg/d) as the first-line therapy.<sup>7</sup> Improvement was seen in 23.7% (n = 13) of patients treated with lorazepam, yet 70% (n = 42) showed either no response or partial response, and ultimately received ECT in combination with lorazepam.<sup>7</sup> The lower improvement rate seen in this review may be secondary to the use of oral lorazepam instead of parenteral, or may highlight the frequency in which patients ultimately go on to receive ECT.

**ECT.** If high doses of benzodiazepines are not effective within 48 to 72 hours, ECT should be considered.<sup>1,7</sup> ECT should be considered sooner for patients with life-threatening catatonia or those who present with excited features or malignant catatonia.<sup>1,2,7</sup> In patients with catatonia, ECT response rates range from 80% to 100%.<sup>2,7</sup> Unal et al<sup>7</sup> reported a 100% response rate if ECT was used as the first-line treatment (n = 5), and a 92.9% (n = 39) response rate after adding ECT to lorazepam. Lorazepam may interfere with the seizure threshold, but if



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Table 1

## Diagnosis and symptoms of catatonia

### Primary diagnostic symptoms

DSM-5 diagnosis requires 3 (or more) of the following 12 symptoms

Stupor*	No psychomotor activity; not actively relating to environment
Catalepsy*	Passive induction of a posture held against gravity
Waxy flexibility	Slight, even resistance to positioning by examiner; often will remain in the new position
Mutism*	No, or very little, verbal response (exclude if known aphasia)
Negativism*	Opposition or no response to instructions or external stimuli
Posturing*	Spontaneous and active maintenance of a posture against gravity
Mannerism*	Odd, circumstantial caricature of normal actions
Stereotypy*	Repetitive, abnormally frequent, non-goal-directed movements
Agitation	Agitation does not appear to be influenced by external stimuli
Grimacing*	Contortion of facial features
Echolalia*	Mimicking another's speech
Echopraxia*	Mimicking another's movements

### Stuporous catatonia:

Other signs, occasionally present but not required for diagnosis

Ambitendency*	Alternating between cooperation and opposition; appears "stuck" motorically
Anorexia	Decreased or absent oral intake
Automatic obedience*	Exaggerated cooperation with examiner's inappropriate requests
Gegenhalten*	Oppositional paratonia (ie, resistance to examiner's motoric examination with force) equal to that applied by examiner
Grasp reflex*	A frontal release sign where the patient reflexively grasps examiner's finger when placed in their palm
Mitgehen*	Extreme form of facilitatory paratonia (ie, exaggerated assistance with examiner's motoric examination, when lightly pressed the patient may continue to raise arm even when examination complete ["anglepoise lamp sign"])
Mitmachen	Facilitatory paratonia (ie, exaggerated assistance with examiner's motoric examination; when arm lightly pressed patient's movement is exaggerated, may return arm to normal position when examination complete)
Palilalia	Repetition of words or phrases with increasing speed but decreasing audibility
Purposeless activity	Seemingly senseless behavior not intended to achieve intelligible goals
Psychological pillow	Elevation of one's head while supine as if a pillow was present
Rigidity*	Generally, of lead-pipe variety, reflective of oppositional negativism
Staring*	Avoidance of eye contact, a reflection of inability to interact with environment
Verbigeration*	Perseverative repetition of meaningless words or phrases
Withdrawal*	Retreat from interpersonal contact or social involvement

### Excitable catatonia:

While any of the signs associated with stuporous catatonia may also be present, these additional signs are suggestive of the excitable catatonia subtype

Autonomic abnormalities*	Vacillation of any vital sign above or below normal range
Combativeness*	Hostile behaviors, including spontaneous physical aggression
Excitement*	Motor unrest, state of agitation and hyperactivity, often hyperkinetic but purposeless in nature
Impulsivity*	Behaviors that are often spontaneous and/or reactive without prior deliberation
Psychosis	Presence of hallucinations and/or delusions

Sources: References 3,6

\*Items screened on the Bush-Francis Catatonia Rating Scale

## Clinical Point

If high doses of benzodiazepines are not effective within 48 to 72 hours, ECT should be considered

## Clinical Point

Antipsychotics carry a risk of potentially worsening catatonia

Table 2

### Medical complications of catatonia

Aspiration
Dehydration
Nutritional deficiency
Electrolyte abnormalities
Weight loss
Venous thromboembolism (ie, pulmonary emboli or deep vein thromboembolism)
Acute renal failure
Muscle contractures
Pressure ulcers
Urinary tract infection
Cardiac arrest
Death
Sources: References 1,2,7

indicated, this medication can be continued.<sup>2</sup> A minimum of 6 ECT treatments are suggested; however, as many as 20 treatments have been needed.<sup>1</sup> Mr. W required a total of 18 ECT treatments. In some cases, maintenance ECT may be required.<sup>2</sup>

**Antipsychotics.** Discontinuation of antipsychotics is generally encouraged in patients presenting with catatonia.<sup>2,7,8</sup> Antipsychotics carry a risk of potentially worsening catatonia, conversion to malignant catatonia, or precipitation of NMS; therefore, carefully weigh the risks vs benefits.<sup>1,2</sup> If catatonia is secondary to psychosis, as in Mr. W's case, antipsychotics may be considered once catatonia improves.<sup>2</sup> If an antipsychotic is warranted, consider aripiprazole (because of its D2 partial agonist activity) or low-dose olanzapine.<sup>1,2</sup> If catatonia is secondary to clozapine withdrawal, the initial therapy should be clozapine re-initiation.<sup>1</sup> Although high-potency agents, such as haloperidol and risperidone, typically are not preferred, risperidone was restarted for Mr. W because of his history of response to and tolerability of this medication during a previous catatonic episode.

**Other treatments.** In a recent review, Beach et al<sup>1</sup> described the use of additional agents, mostly in a small number of positive case reports, for managing catatonia. These included:

- zolpidem (zolpidem 10 mg as a challenge test, and doses of  $\leq 40$  mg/d)
- the *N*-methyl-D-aspartic acid antagonists amantadine (100 to 600 mg/d) or memantine (5 to 20 mg/d)
- carbidopa/levodopa
- methylphenidate
- antiepileptics (eg, carbamazepine, topiramate, and divalproex sodium)
- anticholinergics.<sup>1,2</sup>

Lithium has been used in attempts to prevent recurrent catatonia with limited success.<sup>2</sup> There are also a few reports of using transcranial magnetic stimulation (TMS) to manage catatonia.<sup>1</sup>

Beach et al<sup>1</sup> proposed a treatment algorithm in which IV lorazepam (Step 1) and ECT (Step 2) remain the preferred treatments. Next, for Step 3 consider a glutamate antagonist (amantadine or memantine), followed by an antiepileptic (Step 4), and lastly an atypical antipsychotic (aripiprazole, olanzapine, or clozapine) in combination with lorazepam (Step 5).

### When indicated, don't delay ECT

Initial management of catatonia is with a benzodiazepine challenge. Ultimately, the gold-standard treatment of catatonia that does not improve with benzodiazepines is ECT, and ECT should be implemented as soon as it is clear that pharmacotherapy is less than fully effective. Consider ECT initially in life-threatening cases and for patients with malignant catatonia. Although additional agents and TMS have been explored, these should be reserved for patients who fail to respond to, or who are not candidates for, benzodiazepines or ECT.

#### CASE CONTINUED

After 5 ECT treatments, Mr. W says a few words, but he communicates primarily with gestures (primarily waving people

away). After 10 to 12 ECT treatments, Mr. W becomes more interactive and conversant, and his nutrition improves; however, he still exhibits symptoms of catatonia and is not at baseline. He undergoes a total of 18 ECT treatments. Antipsychotics were initially discontinued; however, given Mr. W's improvement with ECT and the presence of auditory hallucinations, oral risperidone is restarted and titrated to 2 mg, 2 times a day, and he is transitioned back to paliperidone palmitate before he is discharged. Lorazepam is tapered and discontinued. Mr. W is discharged back to his nursing home and is interactive (laughing and joking with family) and attending to his activities of daily living. Unfortunately, Mr. W did not followup with the recommendation for maintenance ECT, and adherence to paliperidone palmitate injections is unknown. Mr. W presented to our facility again 6 months later with symptoms of catatonia and ultimately transferred to a state hospital.

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## Related Resources

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- Carroll BT, Spiegel DR. *Catatonia on the consultation liaison service and other clinical settings*. Hauppauge, NY: Nova Science Pub Inc.; 2016.
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#### Drug Brand Names

Amantadine • Symmetrel	Lorazepam • Ativan
Aripiprazole • Abilify	Lurasidone • Latuda
Asenapine • Saphris	Memantine • Namenda
Carbamazepine • Carbatrol, Tegretol	Methylphenidate • Concerta, Ritalin
Carbidopa/Levodopa • Sinemet	Mirtazapine • Remeron
Citalopram • Celexa	Olanzapine • Zyprexa
Clozapine • Clozaril	Paliperidone palmitate • Invega Sustenna
Divalproex Sodium • Depakote	Quetiapine • Seroquel
Enoxaparin • Lovenox	Risperidone • Risperdal
Fluoxetine • Prozac	Risperidone long-acting injection • Risperdal Consta
Haloperidol • Haldol	Topiramate • Topamax
Lithium • Eskalith, Lithobid	Zolpidem • Ambien

## Clinical Point

**Consider ECT initially in life-threatening cases and for patients with malignant catatonia**