

## Delirium With Catatonic Features: A New Subtype?

July 10, 2009 | [ADHD](#) [1], [Schizoaffective](#) [2], [Geriatric Psychiatry](#) [3], [Catatonic Schizophrenia](#) [4], [Delirium](#) [5], [Addiction](#) [6], [Alcohol Abuse](#) [7]

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Delirium has been recognized and described since antiquity. It is a brain disturbance manifested by a syndrome of diverse neuropsychiatric symptoms. Various terms have been used for delirium, such as acute brain disorder, metabolic encephalopathy, organic brain syndrome, and ICU psychosis.

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[Delirium](#) has been recognized and described since antiquity. It is a brain disturbance manifested by a syndrome of diverse neuropsychiatric symptoms. Various terms have been used for delirium, such as acute brain disorder, metabolic encephalopathy, organic brain syndrome, and ICU psychosis. The DSM-IV model views delirium as an acute reversible neuropsychiatric syndrome caused by general medical conditions and/or exogenous substances.<sup>1</sup> DSM-IV criteria for delirium require a disturbance of consciousness or attention and a change in cognition that develops acutely and tends to fluctuate in severity. Lipowski<sup>2</sup> characterized delirium as a disorder of attention, wakefulness, cognition, and motor behavior.

### CHECK POINTS

- ✓ Motor subtypes in delirium may differ and subtyping may prove useful for clinical and research goals.
- ✓ The most common signs of catatonia associated with hypoactive delirium are immobility, withdrawal, posturing, mutism, and negativism.
- ✓ With hyperactive delirium the signs are impulsivity, mannerisms, excitement, and combativeness.
- ✓ To date, 16 cases have been identified that met criteria for concurrent delirium and catatonia, which supports the concept of a catatonic subtype of delirium.

Here we discuss the various subtypes (hypoactive, hyperactive, and mixed) of [delirium](#) and review the cases of 16 patients who met criteria for concurrent delirium and catatonia. These cases support the concept of a catatonic subtype of delirium. Our findings may have treatment implications that are yet to be determined.

### Etiology, features, and subtypes

Studies of noncognitive features of delirium, such as motor activity, have led to the conceptualization of hypoactive, hyperactive, and mixed subtypes based on the salient activity pattern.<sup>3</sup> Numerous studies over the past 20 years have attempted to define these motor subtypes of delirium. These studies show various rates of the hypoactive, mixed, and hyperactive forms using differing criteria and definitions. Some studies have found that these subtypes predict etiology, clinical course, morbidity, presence of psychosis, and other factors.

Other studies of delirium have shown evidence for neurochemical differences according to motor subtype. For example, in a study of delirium tremens, elevated cerebrospinal fluid concentrations of homovanillic acid (HVA, a metabolite of dopamine) correlated with the degree of agitation.<sup>4</sup> A more recent study examined urinary excretion of 6-sulfatoxymelatonin (6-SMT, a metabolite of melatonin) in patients with hypoactive delirium.<sup>5</sup> Levels of 6-SMT were markedly elevated in patients with hypoactive delirium, and were reduced during recovery.

Table	Possible correspondence between hypoactive delirium and catatonia	
Source	"Hypoactive" item or description	Possible catatonic sign from BFCRS
Confusion assessment method <sup>6</sup>	Decreased level of motor activity, such as sluggishness, staring into space, staying in one position, moving very slowly	Immobility/stupor, staring, posturing
Empirical study of delirium subtypes <sup>1</sup>	Unawareness, decreased alertness, sparse or slow speech, lethargy, slowed movements, staring, apathy	Immobility/stupor, mutism, staring, withdrawal
Memorial Delirium Assessment Scale <sup>2</sup>	Reduced or slowed movements, rarely moves or speaks, is catatonic	Immobility/stupor, mutism, withdrawal
Delirium Rating Scale-Revised-95 <sup>4</sup>	Reduced frequency, spontaneity, or speed of motor movements (mild, moderate, severe)	Immobility/stupor, mutism, posturing, withdrawal
Factor analysis <sup>3</sup>	Decreased amount of activity, decreased speed of actions, reduced awareness of surroundings, decreased amount of speech, decreased speed of speech, listlessness, and reduced alertness and/or withdrawal	Immobility/stupor, withdrawal, mutism

BFCRS, Bush-Francis Catatonia Rating Scale.

Patients with the hyperactive subtype of delirium showed an opposite pattern, with initially low levels that increased with recovery.

In addition to etiology and clinical features, the motor subtype of delirium may affect treatment response. This view is supported by an open prospective study of delirium treatment in 79 patients with cancer.<sup>6</sup> The study used rating scales to monitor severity of delirium after treatment with olanzapine for 7 days. Patients with the hypoactive form of delirium showed a significantly reduced response rate (48%) compared with those who had the hyperactive subtype (83%). However, an earlier smaller study with 24 patients found no difference in the efficacy of haloperidol and chlorpromazine for delirium according to motor subtype.<sup>7</sup> A recent review supports the concept that motor subtypes in delirium may differ and that subtyping may prove useful for clinical and research goals.<sup>8</sup>

The most comprehensive recent synthesis of strategies for motor subtyping of delirium used a factor analysis to define the motor subtypes.<sup>3</sup> The resulting hypoactive motor factor included <sup>7</sup> clinical signs:

- Decreased activity
- Decreased speed of actions
- A reduced awareness of one's surroundings
- Decreased speech
- Decreased speed of speech
- Listlessness
- Reduced alertness, withdrawal, or both

**The presence of at least 2 items from this list identified the hypoactive subtype. Delirium or catatonia?**

Our hypothesis is that hypoactive (or hyperactive) forms of delirium may also be conceptualized as motor signs of catatonia. Sporadic reports suggest that signs of catatonia can be seen in delirium, but there has been no attempt to examine this question systematically using defined criteria for catatonia.<sup>9,10</sup>

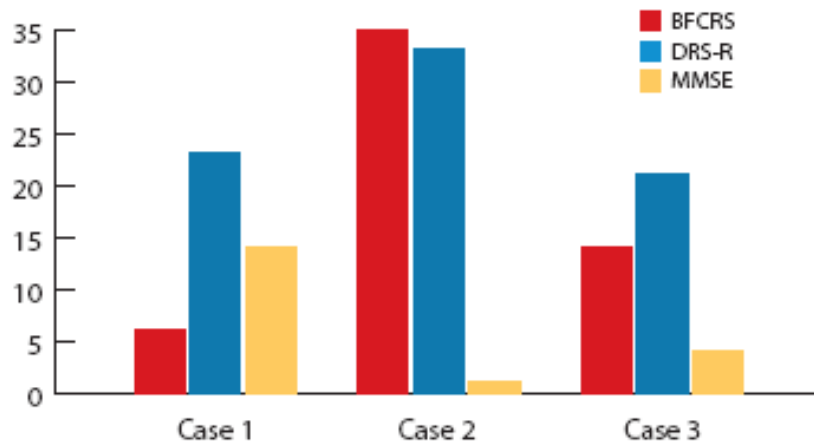
Catatonia is a well-characterized but often unrecognized syndrome with motor and behavioral signs. Among the most common signs are immobility, withdrawal, posturing, mutism, and negativism,

which could be identified in hypoactive delirium. Similarly, impulsivity, mannerisms, excitement, and combativeness are signs of catatonia that may be associated with hyperactive delirium. Establishing the existence of a catatonic subtype of delirium may have implications for treatment, since patients with catatonia respond well to high-potency benzodiazepines, which are generally avoided in the treatment of delirium.<sup>11</sup> Catatonia may worsen or progress to neuroleptic malignant syndrome with butyrophenones (such as haloperidol), which are frequently administered for delirium.<sup>12</sup>

In the DSM schema, delirium requires the recent onset of disturbed consciousness with altered cognition, a fluctuating course, and a medical cause.<sup>1</sup> While these criteria do not overlap with catatonia, other nondiagnostic motor and behavioral aspects of delirium appear in rating scales and models of hypoactive and hyperactive subtypes. Some of these parallel the Bush-Francis Catatonia Rating Scale (BF-CRS) signs of catatonia of which 2 are required for diagnosis: excitement, stupor, mutism, staring, catalepsy, grimacing, echolalia/echopraxia, stereotypy, mannerisms, verbigeration, rigidity, negativism, "waxy flexibility," and withdrawal.<sup>13</sup> The Table summarizes this concordance for

Figure 1

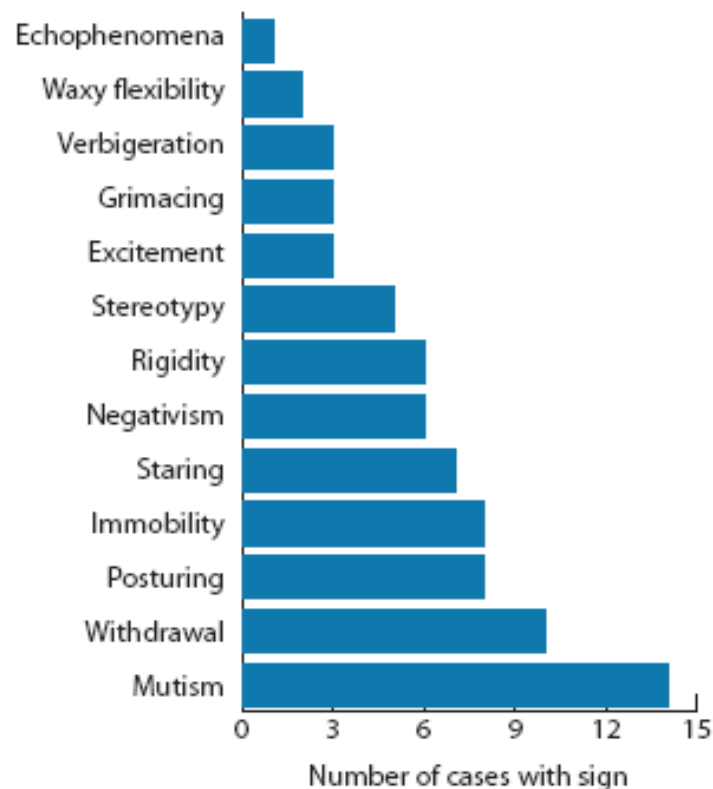
Rating scale scores for catatonia using the BFCRS and delirium severity using the DRS-R and MMSE in 3 medical patients with delirium and catatonia



BFCRS, Bush-Francis Catatonia Rating Scale; DRS-R, Delirium Rating Scale-Revised; MMSE, Mini-Mental State Examination.

Figure 2

Frequency of catatonic signs in 16 patients with concurrent delirium and catatonia



### The catatonic subtype

We recently encountered 3 hospitalized medical patients who had delirium with signs of catatonia. We reported these cases and reviewed earlier reports and available literature that addresses instances in which catatonia accompanied delirium. We sought to determine whether the episodes of delirium would meet clinical (DSM-IV) or research criteria using the BFCRS for catatonia.<sup>1,13</sup> DSM-IV criteria for catatonia secondary to a medical condition (293.89) require an identified medical or toxic cause as well as presence of at least 1 of 12 signs of catatonia. According to DSM guidelines, recognition of catatonia is not allowed in the presence of delirium. However, we have found no empirical basis for this exclusion, which has been refuted.<sup>14</sup>

Research criteria based on the BFCRS require presence of at least 2 signs of the initial 14 from among 23 possible signs, which are operationally defined by this anchored scoring instrument. This rating scale is well validated, has high interreliability, and is sensitive to treatments.<sup>15</sup>

Our method was based on 3 approaches to identify delirium with catatonic features: use of the BFCRS on published case reports of delirium, reassessment of our earlier review of 20 clinical reports of drug-induced catatonia for signs of concurrent delirium, and summation of our 3 recent cases of delirium with the BFCRS.<sup>16,17</sup>

The literature review yielded 6 case reports of delirium with sufficient detail to determine the presence of multiple signs of catatonia on the BFCRS (mean 4.7, range 2 to 7). In all 6 cases, catatonia was attributed to recent benzodiazepine cessation: symptoms improved with drug repletion. Reanalysis of our review of 20 published cases of drug-induced catatonia yielded 7 additional cases in which delirium and catatonia co-occurred. Of these, 6 were induced by disulfiram and 1 by corticosteroids. For these 7 cases, ratings with the BFCRS showed a mean of 5.3 signs of catatonia (range 2 to 12).

Finally, the 3 recent medical patients seen on our psychiatry consultation service who had DSM-IV delirium were concurrently rated using the Delirium Rating Scale-Revised (DRS-R), Mini-Mental State Examination (MMSE), and the BFCRS.<sup>18,19</sup> The 3 patients met DSM-IV criteria for delirium simultaneously with the DSM-IV and Bush-Francis criteria for catatonia. They showed 5, 7, and 11 BFCRS signs of catatonia, respectively. The DRS-R, MMSE, and BFCRS scores are summarized in Figure 1.

A summary of the 13 cases from the literature along with the 3 new cases reveals the frequency distribution of catatonic signs of retarded catatonia typical of that seen in psychiatric inpatients without delirium (shown in Figure 2).

### Case Vignette

We previously reported the emergence of simultaneous catatonia and delirium in 2 patients who had received electroconvulsive therapy (ECT).<sup>10</sup>

The first patient was a 41-year-old woman with schizoaffective disorder, who had been treated with several psychiatric medications (including haloperidol decanoate) and who had had a recent episode of pneumonia.

Her presenting symptoms were auditory hallucinations and suicidal ideation. Dosages of sodium divalproex, paroxetine, and bentiropine were tapered in preparation for ECT. Clonazepam was also tapered off and discontinued over 2 weeks. Risperidone was started and titrated to 4 mg daily; mirtazapine was added at 15 mg daily. The interval between the last benzodiazepine dose and the start of ECT was 16 days.

A day after the fourth ECT session, the patient was found immobile, confused, and disoriented. She was rigid, mute, stared vacantly, and refused to eat or drink. She had ambitendency and catalepsy. She was afebrile but tachycardic. She was incontinent of urine and feces. Clinical diagnoses of catatonia and post-ECT delirium were made. Risperidone was discontinued.

The catatonia resolved with multiple

1-mg doses of lorazepam IM. ECT was discontinued. The patient reported a decrease in the auditory hallucinations, and olanzapine was prescribed at 5 mg daily. She was discharged from the hospital 1 week later after symptoms had resolved.

### Conclusions

To date, we have identified 16 patients who met criteria for concurrent delirium and catatonia. Their cases support the concept of a catatonic subtype of delirium. All 16 met DSM-IV and Bush-Francis criteria for catatonia, and they showed a mean of 5.5 (range 2 to 12) signs of catatonia on the BFCRS. The number of BFCRS signs and the severity scores were well within those typical of hospitalized psychiatric patients who present with catatonia.<sup>15</sup> In cases where benzodiazepine cessation was implicated, resumption of therapy resulted in resolution of the catatonia among these patients with concurrent delirium and catatonia.<sup>9,10</sup>

Insufficient data are available about the frequency of catatonic features in delirium, or the treatment implications of this co-occurrence. Based on the case series of 3 new patients, there may not be a relationship between severity of the delirium (MMSE or DRS-R-98 score) and the severity of catatonia (BFCRS score). We are planning a study of prevalence of signs of catatonia among medical patients with delirium. Meanwhile, we seek to alert clinicians to the preliminary findings that some patients with delirium may show prominent catatonic features. These findings have treatment implications that are yet to be determined.

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Benzotropine mesylate oral (Cogentin)  
Chlorpromazine (Largactil, Thorazine)  
Clonazepam (Klonopin, Rivotril)  
Disulfiram (Antabuse)  
Divalproex (Epival, Depakote)  
Haloperidol (Haldol)  
Lorazepam (Ativan)  
Olanzapine (Zyprexa)  
Paroxetine (Paxil)  
Risperidone (Risperdal)

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