

Catatonia from the first descriptions to DSM 5

Catatonia dalle prime descrizioni al DSM 5

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Summary

Aims

This paper aims to provide an update to clinicians regarding the changes of the diagnostic criteria of catatonia in DSM 5.

Methods

The authors have made a review of the literature concerning catatonia using the keywords mentioned below; the various versions of DSM have been also consulted.

Results

Although catatonia has historically been associated with schizophrenia, it occurs more frequently in conjunction with mood disorders or somatic diseases.

Therefore, since the fourth edition of the DSM, catatonia has been both a specifier for affective episodes and it has been pos-

sible to make diagnosis of catatonia due to a general medical condition.

In DSM 5 four changes have been made: 1) the catatonia is described in the whole manual, regardless of the condition which appears to be associated with, by the same type and number of criteria, 2) it is a specifier both of schizophrenia and affective episodes (the catatonic subtype of schizophrenia has been removed), 3) it is used as a specifier for other psychotic spectrum disorders, and 4) finally, there is the category "NOS" that allows the rapid diagnosis where the etiology is not immediately identifiable.

Discussion

These changes will improve the recognition of catatonia within the various psychiatric disorders and they will facilitate the treatment.

Key words

DSM • Catatonia • Mood disorders • Schizophrenia • Diagnosis

Introduction

In 1874 Karl Kahlbaum described catatonia as an independent psychiatric syndrome characterized by cyclic course and alternating manic, depressive and psychotic phases, with an eventual deteriorative course¹. In the early years of the twentieth century Emil Kraepelin described catatonia as a possible manifestation of *dementia praecox*². Bleuler, following Kraepelin's approach, categorized catatonia as a subtype of schizophrenia³. In the subsequent years, the term "catatonia" was considered a synonymous of schizophrenia. This diagnostic classification prevailed in the scientific literature of the twentieth century, conditioning the first editions of the ICD and of the DSM classifications⁴⁻⁹.

Catatonia in the diagnostic classification systems

During the 80s and 90s a number of studies suggested that catatonic syndromes could complicate the course not only of schizophrenia but also of affective disorder and

different medical conditions, such as metabolic (renal or liver failure, ketoacidosis, vitamin B12 deficiency), endocrine (hyperthyroidism, hypercalcemia from parathyroid adenoma, Addison's disease, Cushing's disease, SIADH), neurological (encephalitis, multiple sclerosis, epilepsy), rheumatologic (systemic lupus erythematosus) and infectious diseases (typhoid fever, mononucleosis, malaria)^{10-12 13-18}.

For these reasons the authors of the last versions of the most important diagnostic classification systems changed their approach to catatonia.

In particular the International Classification of Disease (ICD-10)⁹ added the possibility to diagnose an "organic catatonic disorder" while the DSM-IV⁷ enlarged the borders of catatonia to three different contexts:

1. Catatonic Disorder due to a General Medical Condition;
2. Schizophrenia-Catatonic Subtype;
3. Episode Specifier for Major Mood Disorders without specific numerical code (Bipolar I disorder – *single manic episode; most recent episode manic; most recent episode depressed; most recent episode mixed* – or Major Depressive Disorder – *single episode or recurrent*).

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The clinical picture of catatonia in DSM IV is characterized by five groups of symptoms (Table I).

The manual requires the presence of at least two of the five groups of symptoms for the diagnosis of catatonia as a subtype of schizophrenia or as a specifier of an affective episode, while for the diagnosis of “catatonia due to a general medical condition” is sufficient the observation of only one of the five sets of symptoms.

Even if DSM IV represented an important step towards the recognition and assessment of catatonia, some authors criticized this approach:

1. DSM IV criteria remain vague, leading to a discrepancy between the frequent clinical observation of catatonic symptoms in patients with psychiatric (7-31% of cases) or somatic disorders (20-25 % of cases) ^{15 16 19-21} and the relative rarity of the diagnosis of catatonia ²². Even the diagnosis of catatonic schizophrenia is rarely used (0.2-3% of all diagnoses of schizophrenia) ^{23 24};
2. catatonic schizophrenia, as formulated in the DSM-IV, is of low clinical utility, penalized by a low stability and poor reliability ²⁵⁻²⁷. Van der Heijden et al., (2005) found that among patients admitted with acute psychosis catatonic symptoms were recognized in 18% of the sample when assessed by skilled clinicians and in only in 2% when assessed by clinical practitioners ²¹;
3. according to DSM-IV catatonia can be diagnosed only in the context of schizophrenia (as subtype) or major mood disorders (as an episode specifier) ⁷. Actually catatonia is also present in other psychiatric disorders. Individual case reports and extensive clinical case series report the presence of catatonia in the context

of schizoaffective, schizophreniform, brief psychotic disorder, substance-induced psychotic disorder ²⁸⁻³⁰, obsessive-compulsive disorder, autism and other developmental disorders ³¹⁻³⁵;

4. the manual did not permit a diagnosis when the link between catatonia and a medical/neurological disorder is not immediately evident, as it happens in the initial stages of a clinical evaluation. Clinical experience and research data have highlighted the importance of early diagnosis of catatonia, especially for the therapeutic-prognostic implications ³⁶⁻³⁹. The term of “idiopathic catatonia” is often used in these cases ^{40 41}, even if it is not recognized neither in ICD-10, nor in the DSM-IV.

Catatonia as an autonomous diagnostic category

According to some authors the most important limit of DSM-IV approach is that catatonia is not recognized as a specific syndrome ⁴². The hypothesis that catatonia should be considered an autonomous diagnostic category is based on some clinical evidences:

- a. catatonia is common, though not always correctly recognized. In the 10 principal prospective studies from 1990 to 2010, catatonia was identified in a mean percentage of 9.8% of adult admission. These patients have multiple signs of catatonia (commonly >5); 68% are mute and negativistic and 62% are withdrawn. Some are unable to eat, requiring parental nutrition and/or medication ⁴²;
- b. catatonia syndrome is identifiable, characterized by a well defined clinical picture although it occurs with extremely variable signs and symptoms. Several Catatonia Rating Scales, as the Bush-Francis Catatonia Rating Scale ⁴³, can help in identifying catatonic symptoms. Factor analytic studies have delineated patterns among catatonic features. In particular, Taylor and Fink have extracted two factors: one consisting of catalepsy, posturing, mutism and negativism and a second characterized by echophenomena, automatic obedience, verbigeration and other stereotypies ⁴⁴;
- c. catatonia has a stable course, described by various researchers as a generally cyclic disorder, with episodes of excitement, depression and psychosis. The course is not malignant, as described in the past: the good response to specific treatments in most cases prevents the worse outcome;
- d. catatonia is frequently associated with mood disorders. Considering catatonia as an independent syndrome would definitely separate the diagnosis from schizophrenia ^{45 46}. Only 10-15 % of catatonic patients present a diagnosis of schizophrenia and, according to recent data, the frequency would be even lower

TABLE I.
Diagnostic criteria for catatonia in DSM-IV (APA, 1994). *I criteri diagnostici per catatonia nel DSM-IV (APA, 1994).*

At least one (Catatonia secondary to a general medical condition)/two (for Catatonia subtype of schizophrenia/specifier of mood disorder) of the following:
1. Motor immobility as evidenced by catalepsy (including waxy flexibility) or stupor
2. Excessive motor activity (that is apparently purposeless and not influenced by external stimuli)
3. Extreme negativism (resistance seemingly no reason at all commands or maintenance of a rigid posture against attempts to be moved) or mutism
4. Peculiarities of voluntary movement as evidenced by the trend towards fixed posture (voluntary assumption of inappropriate or bizarre postures), stereotyped movements, mannerisms or prominent grimacing
5. Echolalia or echopraxia

(7.6%)⁴⁷. Catatonic episodes are most frequently associated with mood disorders, particularly with severe form of mania. About one third of patients who accesses mental health services with catatonic features presents bipolar disorder. Patients with bipolar disorder and catatonic symptoms present a higher number of mixed episodes, greater severity of manic symptoms, and longer periods of hospitalization. Finally, catatonia usually has a poor response to antipsychotics (7.5%), which sometimes may also complicate the clinical picture, facilitating the development of the malignant form³⁷;

- e. catatonia has a specific diagnostic test: the lorazepam challenge test consists in an intravenous injection of 1 mg of lorazepam. If no change is observed over a period of 5 minutes, an additional dose of 1 mg is injected i.v. Within 10 minutes, in at least two-thirds of patients there is a reduction in stiffness, the appearance of spontaneous movements and recovery of speech. The positivity of the test encourages the use of intravenous lorazepam, in doses ranging up to 24 mg/day, with a satisfactory response in 90% of cases. The negativity does not rule out a possible subsequent therapeutic response to BDZ, but suggests the preferential treatment with ECT⁴⁵;
- f. once diagnosed, catatonia responds to specific treatments (Table II). Unfortunately, the correlation with schizophrenia, has prompted the use, potentially harmful, of antipsychotics. On the other hand, if not immediately recognized, catatonia may be complicated by severe somatic diseases such as malnutri-

tion, infection, muscle contractures, bed sores, and thrombo-embolism;

- g. catatonia has neurobiological specific correlates: many authors suggested a correlation between catatonic symptoms and specific alterations of the striatal-thalamic-cortical circuit, involving the frontal and parietal cortex, the basal ganglia and cerebellum^{44,48}. The efficacy of BDZ seems to suggest an impairment of the GABAergic system; indeed, some authors reported a reduction of GABAergic function and blood perfusion in the right lateral orbitofrontal cortex in patients with catatonia. Since this area has direct connections with the amygdala, its involvement may explain the intense feelings of fear and anxiety often reported by catatonic patients. The GABAergic system also exerts a tonic inhibition of circuits that regulate innate behavioral sequences: a reduction of the GABAergic activity in these areas may results in the reappearance of predetermined behaviors towards stressful situations. These manifestations could also be the consequence of a hyperactivity of glutamatergic circuits, which would lead to a dysfunction of the posterior parietal lobe responsible for the trunk with the prefrontal cortex, which would justify the appearance of symptoms such as posturing and alteration of the position of the body segments in space, with a possible rationale for the use of antagonists of NMDA receptors^{49,50}. Finally, the dopaminergic circuit is modulated by the GABAergic system and serotonergic projections from the dorsal raphe: the alteration of dopaminergic transmission would compromise the thalamocortical circuit. For these reasons Northoff et al.⁵¹ have recently suggested that catatonic syndromes are sustained by an impairment of the GABAergic system with a secondary involvement of the dopaminergic transmission responsible for the movement disorders (“top-down dysregulation”).

TABLE II.
The treatment of catatonia. *Il trattamento della catatonia.*

BDZ i.v. (in particular lorazepam): especially effective when the challenge test is positive; dosages must be high and the treatment should be prolonged until complete resolution of catatonic symptoms. In these cases the overall response rates is around 70%
ECT: is effective in about 85% of cases, and represent the treatment of choice in the malignant form (about 90% of these have a positive response to ECT and only 40% to BDZ) or in the excited-delirious form of catatonia. Sessions of ECT should be rather close (typically three per week)
BDZ i.v. + ECT: can be used together, given their synergic effect, even if the dose of benzodiazepines should be reduced as they can rise the seizure threshold.
GABA-A agonist zolpidem and NMDA antagonists (mementine, amantadine): few positive data.
Antiepileptics: their use is still doubtful, but certainly not harmful

Among the main supporters of a “catatonic syndrome”, Taylor and Fink, coming back to the unitary point of view of Kahlbaum^{18,36,44,52}, proposed to consider catatonia as an independent diagnostic category (similar to what happened for the *delirium*), characterized by a unique numeric code and represented by three clinical subtypes:

- nonmalignant catatonia (*Kahlbaum syndrome*): the most frequent form of catatonia, characterized by immobility, mutism, negativism, posturing, rigidity up to stupor. This clinical picture has a positive response to treatment with benzodiazepines (lorazepam generally, 6-20 mg intravenously);
- delirious catatonia: defined by the presence of excitement, aimless hyperactivity, stereotypies, verbigeration, altered state of consciousness and delirium. It requires high doses of benzodiazepines, usually worse

if treated with antipsychotics (possible evolution in the malignant form) and often requires the adjunctive use of ECT;

- malignant catatonia: characterized by acute onset, fever and evidence of autonomic instability (hypo/hypertension, tachycardia, tachypnea, diaphoresis), increased enzyme of muscle necrosis, reduction of circulating iron, leukocytosis. Somatic complications are frequent (dehydration, infections, thromboembolic phenomena). It requires life-supportive care and it is potentially fatal if not promptly and adequately treated. This form usually respond to ECT, while response to benzodiazepine is poor or inconsistent. The authors included in this group also the Neuroleptic Malignant Syndrome and the Serotonin Syndrome ⁴⁴.

For each of these clinical subtypes the authors suggested four specifiers: a) secondary to mood disorder; b) secondary to a general medical condition or toxic state; c) secondary to a neurological disorder, d) secondary to a psychotic disorder.

Fink and Taylor, moreover, suggested a set of different diagnostic criteria for catatonia (Table III) to address the poor specificity of DSM-IV diagnosis. First of all they criticized the fact that, according to DSM-IV criteria, the non-specific features of immobility and excitement are sorted equally with the more specific features of catalepsy, waxy flexibility, negativism and mutism. While catalepsy and echophenomena are specific catatonic features, excessive motor activity and severe immobility are not. Then, the authors have underlined the absence of a duration criterion, which compromises diagnostic reliability. Catatonic features typically come and go and can be quite variable in time: Fink and Taylor stressed the need that symptoms last at least one hour in order to facilitate reliability among observers. The authors tried to strengthen the boundaries of the syndrome, to facilitate further study and the application of appropriate treatments.

TABLE III.

Fink and Taylor's recommended diagnostic criteria for catatonia (adapted from Fink and Taylor, 2003) ¹³. *I criteri diagnostici di Fink e Taylor raccomandati per la catatonia (adattato da Fink e Taylor, 2003)* ¹³.

- A. Immobility, mutism, or stupor of at least one hour duration, associated with at least one of the following: catalepsy, automatic obedience, posturing, observed or elicited on two or more occasions
- B. In the absence of immobility, mutism or stupor, at least two of the following, which can be observed or elicited on two or more occasions: stereotypy, echophenomena, catalepsy, automatic obedience, posturing, negativism, ambitendency

DSM 5

The authors of the DSM 5 considered all the hypotheses and suggestions proposed in the field of catatonia during the last two decades and obviously decided to take into account only some of them. A great effort was spent to improve the usefulness and applicability of the clinical diagnosis of catatonia. Compared to the previous version of the manual, the DSM 5 introduces four key changes (Tables IV-V):

- a. criteria for catatonia are the same throughout the manual, independent from the initial diagnosis: psychotic, bipolar, depressive, medical disorders or an unidentified medical condition. In order to facilitate the recognition, catatonia is defined by the presence of at least 3 symptoms from a list of 12, extracted from a validated rating scale by Peralta et al. ^{53 54} (Table IV);
- b. the catatonic subtype of schizophrenia is deleted (along with all other schizophrenia subtypes) and catatonia becomes a specifier for schizophrenia as for major mood disorders;
- c. catatonia becomes a *specifier* for four additional psychotic disorders: 1. Brief psychotic disorder; 2. Schizo-

TABLE IV.

Definition of catatonia in DSM 5 (APA, 2013). *Definizione della catatonia nel DSM 5 (APA 2013).*

Catatonia is defined by the presence of three or more of the following:
1. Catalepsy (i.e., passive induction of postures held against the gravity)
2. Waxy flexibility (i.e., slight and even resistance to repositioning by the examiner)
3. Stupor (no psychomotor activity, no reactivity to the environment)
4. Agitation, not influenced by external stimuli
5. Mutism (i.e., no or minimal verbal response- not applicable in case of established aphasia)
6. Negativism (i.e., opposing or not responding to external stimuli or instructions)
7. Posturing (i.e., spontaneous and active maintenance of posture against gravity)
8. Mannerism (i.e., odd caricatures of ordinary actions)
9. Stereotypies (i.e., repetitive, frequent, non-goal directed movements)
10. Grimacing
11. Echolalia (i.e., repeating the words spoken by the examiner)
12. Echopraxia (i.e., mimicking of movements made by the examiner)

- phreniform disorder; 3. Schizoaffective disorder; 4. Substance-induced psychotic disorder (Table V);
- d. a new residual diagnostic category: "Catatonia not otherwise specified-NOS" is added, to facilitate the diagnosis in patients with psychiatric conditions other than schizophrenia and mood disorders or when the underlying general medical condition is not immediately recognized.

The ongoing debate

The changes carried out in the DSM 5 have been widely criticized⁴⁸. According to some authors, the two categories of "Catatonia due to general medical condition" and "Catatonia NOS" easily overlap in clinical practice, while the excessive enlargement of the diagnosis of Catatonia NOS, even if useful to begin immediately a specific treatment, it would lead clinicians to neglect the search for a detailed diagnosis of the underlying condition. Moreover the duration criteria has not yet been considered. Despite the long standing debate, the proposal to create an independent diagnostic category for catatonia, completely detached from mood or psychotic disorders and somatic/neurological conditions, has not been accepted by the authors of the DSM 5. Different authors suggested that a non-coded specifier badly serves clinical practice and research. A specific diagnostic code would help the recognition of catatonia as a syndrome and would best fit for research on nosology, treatment and outcome¹⁸. Catatonia is still included in the "schizophrenia spectrum and other psychotic disorders" section. This position is somehow confounding when the syndrome is considered a specifier for other mental disorders or medical conditions.

TABLE V.

The possible diagnosis of catatonia in DSM- 5 (APA, 2013).
Possibile diagnosi di catatonia (APA 2013).

1. Catatonia due to a general medical condition
2. Specifier "with catatonia" to:
a. Schizophrenia
b. Schizoaffective disorder
c. Schizophreniform disorder
d. Brief psychotic disorder
e. Substance-induced psychotic disorder
3. Specifier with another mental disorder (i.e. Neurodevelopmental disorder, Bipolar disorder, Major depressive disorder, other mental disorders)
4. Catatonia disorder NOS (not otherwise specified)
Use the same set of criteria for the diagnosis of catatonia across the DSM- 5

Tandon et al. in a recent paper⁵⁵ have summarized the arguments in favor of the DSM 5 task force. The DSM 5 authors assumed that mental disorders (depression, schizophrenia, mania) associated with catatonia have a greater stability of course compared to catatonia itself. For example, patients with recurrent depression presenting an episode with catatonic features not necessarily manifest the same symptoms in the subsequent relapses. The same applies to schizophrenic patients, who may show catatonic symptoms during a period of illness and not in the subsequent course of illness. Therefore the choice of describing catatonia as a specifier of the primary psychiatric disorder seems to be more appropriate. Moreover classification of catatonia as an independent diagnosis could lead to an artificial increase of the percentage of comorbidity in mental illness.

Catatonia is characterized by a relatively uniform clinical picture in different clinical contexts, however differences in response to treatment seem to be related to the associated mental disorder and not to a specific set of symptoms belonging to the catatonic syndrome. For example BDZ and ECT are less effective when catatonia is associated with chronic schizophrenia compared to other diagnosis⁵⁶⁻⁵⁸. Moreover, the use of atypical antipsychotics, although generally not recommended in catatonia, can be justified when the syndrome is associated with psychotic disorders, thanks to their dopamine-stimulating property in the cortical prefrontal area^{56,57}.

In the final evaluation has therefore prevailed the opinion that the new version of the DSM 5 would adequately correct the deficiencies of DSM-IV and improve clinical diagnosis⁵⁹.

Conclusions

The DSM 5 approach to catatonia have disappointed a number of researchers and clinicians. This notwithstanding the DSM 5 task force, while not yet recognizing catatonia as an independent syndrome, has corrected those theories that affected negatively medical care and research for over a century. The new version of the DSM encourages clinicians to assess catatonic symptoms and signs in the most various mental disorders and to start immediately the most proper treatment even when the underlying cause is not immediately evident. This change is particularly useful in two clinical conditions:

- when an incomplete knowledge of the clinical picture or particularly complex diagnostic procedure do not consent to identify immediately the medical disorder associated with catatonia;
- when catatonic symptoms occur in the context of an autistic spectrum disorder and other developmental disorders⁶⁰⁻⁶².

In these cases the diagnosis of catatonia-NOS allows to

start immediately a correct treatment without unnecessary and harmful delays. Future studies will indicate if this approach to catatonia really help clinicians in the managing and treatment of this severe and sometimes fatal syndrome.

Conflict of interests

The authors have not received grants.

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