

Viewpoints

Thoughts on Selected Movement Disorder Terminology and a Plea for Clarity

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Abstract

Description of the phenomenology of movement disorders requires precise and accurate terminology. Many of the terms that have been widely used in the literature are imprecise and open to interpretation. An examination of these terms and the assumptions implicit in their usage is important to improve communication and hence the definition, diagnosis, and treatment of movement disorders. I recommend that the term *dyskinesia* should be used primarily in the settings of Parkinson's disease and tardive dyskinesia, in which its clinical implications are relatively clear; it should not be used in other situations where a precise description could more usefully facilitate diagnosis and treatment. In general *dyskinesia* should be used in the singular form. *Extrapyramidal* is based upon obsolete anatomical concepts, is uninformative, and should be discarded. The term *abnormal involuntary movements (AIMs)* is similarly vague and uninformative, although is unlikely to be eliminated from the psychiatric literature. Movement disorder neurologists as teachers, clinicians, article reviewers, and journal editors have the responsibility to educate our colleagues regarding appropriate usage and the importance of employing correct descriptors.

Citation: Walker RH. Thoughts on selected movement disorder terminology and a plea for clarity. Tremor Other Hyperkinet Mov 2013; 3: <http://tremorjournal.org/article/view/203>

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Editor: Elan D. Louis, Columbia University, United States of America

Received: October 2, 2013 **Accepted:** October 23, 2013 **Published:** December 16, 2013

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Funding: None.

Financial disclosure: None.

Conflict of interest: The authors report no conflict of interest.

Introduction

The widespread use of video recordings in recent years has facilitated more homogeneous use of descriptive terms for various movement disorders. While there is inevitable drift in meaning over time,¹ for example in usage of the term *chorea*, which originally described a traditional Greek circle dance (*χορος*), the appearance of this movement disorder is at present fairly uniformly appreciated.

Two terms that are commonly used in the field of neurology in general, and movement disorders in particular, are being widely employed without consideration of their precise etymology. These terms are *dyskinesia* and *extrapyramidal*. These words are often employed when the observer is unable to provide a more exact description, whether through lack of knowledge of the appropriate terminology or because the movements are unusual, complex, and challenging to describe.

A third phrase, *abnormal involuntary movements (AIMs)*, is used widely in the psychiatric field but is similarly imprecise. Here, I discuss the usage and meaning of these terms and make a plea for the use of more accurate terminology.

Dyskinesia

This term, originating from the Greek, means *abnormal movement*, and thus is imprecise by definition. It is often currently used to refer to two specific conditions, *levodopa-induced dyskinesia* in Parkinson's disease (PD), and *tardive dyskinesia* induced by dopamine-blocking agents, in addition to non-specific usage.

The plural *dyskinesias* is used very frequently and incorrectly. It should be noted that *dyskinesia* is a mass noun (like *water*) and should generally be used in the singular form, as *chorea* or *parkinsonism*. (One would not say *a dyskinesia*.) The exception is when the term is used, as with the plurals of the symptoms *chorea*, *dystonia*, *parkinsonism*, etc., to refer collectively to the groups of disorders that cause these symptoms, e.g. *the genetic dystonias* and *the atypical parkinsonisms*. *Dyskinesias* may also be used to refer to several different hyperkinetic movements (e.g., dystonia and chorea).

The lack of specificity of the term is illustrated in The Encyclopedia of Movement Disorders, as one example, in which this rather vague definition of dyskinesia in the setting of PD is given:

“Dyskinesias are abnormal involuntary hyperkinetic movements commonly observed in patients with PD chronically treated with levodopa (levodopa induced dyskinesias (LIDs)) and rarely with dopaminergic agonists,” which are “typically a mixture of chorea, ballism, and dystonia or more rarely myoclonus.”²

In PD, the nature of involuntary, hyperkinetic movements varies depending upon the temporal relationship to medication dosing. Movements can be irregularly irregular, flowing, or multi-focal (i.e., chorea), as is typical for the *peak-dose dyskinesia* or when the medication is taking effect or wearing off (*diphasic dyskinesia*). Dystonia is more usually seen when the patient is “off.” The appearance of the movements and additional features are helpful in determining appropriate management; thus, specificity is essential.

The movements of tardive dyskinesia can be complex and difficult to describe.³ In some cases, the movements are flowing and irregular and can be recognized as chorea. In others, there is clear dystonia with the same muscle groups involved in repetitive movements, while some cases exhibit sustained abnormal postures. In yet other situations, involuntary movements are flowing but are more complex and repetitive and may appear more like stereotypies. In some cases, there may be confusion between tardive dyskinesia and drug-induced parkinsonian tremor (Video).

The distinction between tardive chorea and tardive dystonia is important. Tardive chorea is often not troublesome to patients and



Video. Female Patient with “Tardive Dyskinesia Affecting the Hands.” This patient was referred by her psychiatrist for evaluation and management of “tardive dyskinesia affecting the hands,” which interfered with her activities of daily living. She has a staring expression; repetitive stereotypic movements of the tongue and mouth; and a regular, large amplitude tremor of the hands present at rest and with action. She was on haloperidol for chronic schizophrenia. While the movements of her lower face were typical of tardive dyskinesia, her staring expression with decreasing blinking indicated drug-induced parkinsonism. Recognition of the hand movements as tremor (a term supplied by the patient!), even though present both at rest and with action, was consistent with this diagnosis. Conversion to quetiapine resolved the drug-induced parkinsonism and improved the facial movements.

typically does not interfere with tasks, such as speaking or eating. In contrast, tardive dystonia can be very disabling, resulting, for example, in action-induced jaw-opening or -closing movements, which interfere with speaking and eating. The treatment of these entities differs. Anticholinergics worsen or have no effect on tardive chorea but can sometimes reduce tardive dystonia. Injections of botulinum toxin can be helpful in treating tardive dystonia.

To add to the confusion, the episodic movement disorders known as *paroxysmal dyskinesias* are at present classified with the dystonias, in recognition of the nature of the predominant movement disorder. To date, these include paroxysmal non-kinesigenic dyskinesia (DYT8), paroxysmal kinesigenic dyskinesia (DYT10), and exertional dyskinesia (DYT18). As inherited disorders are being increasingly classified in terms of their genotype rather than their phenotype, I hope that the genetic terminology will eventually be the defining language of these disorders.

The term *dyskinesia* is also used relatively frequently, especially in non-specialist literature, to refer to hyperkinetic movements that are not otherwise defined.⁴⁻⁶ This usage obscures important differences in etiology, pathophysiology, and therapy between different movement disorders, typically chorea and dystonia, and thus perpetuates confusion.

Extrapyramidal

The term *extrapyramidal* is technically an anatomic descriptor, referring to structures located outside the pyramidal, or corticospinal, tracts.^{7,8} Symptoms described as *extrapyramidal* are usually those assumed to originate in the basal ganglia. However, this term could technically be used to refer to symptoms due to lesions of almost any other part of the brain, such as the cerebellum, brainstem, or midbrain. The implication of this term is, of course, that some form of movement disorder is present; however, this adjective is only marginally informative without further definition.

At present, this term tends to be used particularly in the psychiatric literature, often describing unwanted effects of psychiatric medications. However, it still can be found even in the movement disorders literature. *Extrapyramidal* is typically used to refer to tardive dyskinesia, and hyperkinetic movement disorders in general, particularly chorea and dystonia, but it may also describe parkinsonism.

Extrapyramidal appears to have been used initially in an experimental, physiological context in the later part of the 19th century^{7,8} and was first employed in a clinical context by Wilson in his report of familial hepatolenticular degeneration.⁹ The original usage was based on an understanding of a descending pathway that functioned in parallel with and with complementary functions to the corticospinal tracts.^{7,8} As much of what is now understood about basal ganglia functioning focuses upon their internal loops (e.g., striato-pallido-thalamo-cortico-striatal) and influences cortical output, the concept of *extrapyramidal tracts* with direct descending projections to spinal neurons is evidently obsolete. While it has been proposed that the term be reserved as an anatomical term for brainstem outflow tracts,⁸ this usage is likely to

result in further confusion, as being even further removed from the clinical observation of movement disorders.

I recommend that “extrapyramidal symptoms” be referred to as “movement disorders”, unless a more specific term can be employed.

Abnormal involuntary movements

The term abnormal involuntary movements (AIMs) is used predominantly by psychiatrists to refer to any involuntary hyperkinetic movements. The implication is that these movements are a side effect of medications, and this term is typically used to describe tardive dyskinesia due to dopamine-blocking anti-psychotic medications.¹⁰ This phrase is often used interchangeably with the Abnormal Involuntary Movements Scale (AIMS) tool that rates the severity of these movements¹¹.

The AIMS is one of the major instruments used in the clinical context to document movement distribution and severity. However, this rating scale does not permit recognition of their true nature and does not distinguish, for example, between chorea and dystonia, or if movements are due to akathisia. In addition, while the instructions are to exclude tremor, this is not always recognized, especially when severe (Video).

The assumption implicit when the AIMS evaluation is performed is that the movements are caused by medication use, and this may obscure the realization that the movements are due to a progressive neurodegenerative disorder, such as Huntington’s disease, which can also be responsible for the patient’s psychiatric illness.

Conclusion

Clarity in language is essential for communication. The correct definition of the observed phenomenology is essential to generate the appropriate list of differential diagnoses, and hence treatment. While I would like to discard the use of *dyskinesia* as imprecise and replace it with chorea, dystonia, or other terms as appropriate, this term is so entrenched in movement disorders literature that this is unlikely to happen. I suggest that its use be restricted to the settings of PD and tardive dyskinesia, in which its clinical implications are relatively clear, but that it should not be used in other situations where a precise description could more usefully facilitate diagnosis and treatment. As discussed above, in most situations, *dyskinesia* should be used in the singular form. *Extrapyramidal* is based upon obsolete anatomical concepts and should be replaced with more informative terminology.

The term *AIMs* is similarly vague and uninformative, although it is unlikely to be eliminated from the psychiatric literature.

As movement disorders neurologists, it is incumbent upon us to set the standards for the description of involuntary movements. Reviewers of articles and journal editors should insist upon precise and accurate definitions whenever they come across these terms.

References

1. Goetz CG, Chmura TA, Lanska DJ. History of chorea: Part 3 of the MDS-sponsored history of movement disorders exhibit, Barcelona, June 2000. *Mov Disord* 2001;16:331–338, doi: <http://dx.doi.org/10.1002/mds.1066>.
2. Rascol O, Fabre N, Brefel-Courbon C, et al. Dyskinesias. In: Encyclopedia of Movement Disorders, ed. Kompoliti, K. and Verhagen, L., Academic Press, Oxford, UK, 2010; 350–361.
3. Waln O, Jankovic J. An update on tardive dyskinesia: from phenomenology to treatment. *Tremor Other Hyperkinet Mov (N Y)* 2013;3. pii:tre-03-161-4138-1.
4. McCreddie RG, Padmavati R, Thara R, et al. Spontaneous dyskinesia and parkinsonism in never-medicated, chronically ill patients with schizophrenia: 18-month follow-up. *Br J Psychiatry* 2002;181:135–137, doi: <http://dx.doi.org/10.1192/bjp.181.4.321>.
5. Merrill RM, Lyon JL, Matiaco PM. Tardive and spontaneous dyskinesia incidence in the general population. *BMC Psychiatry* 2013;13:152–13, doi: <http://dx.doi.org/10.1186/1471-244X-13-152>.
6. Pappa S, Dazzan P. Spontaneous movement disorders in antipsychotic-naïve patients with first-episode psychoses: a systematic review. *Psychol Med* 2009;39:1065–1076, doi: <http://dx.doi.org/10.1017/S0033291708004716>.
7. Louis ED. The origins of the term “extrapyramidal” within the context of late nineteenth- and early twentieth-century neurology, neurophysiology and neuropathology. *J Hist Med Allied Sci* 1993;48:68–79, doi: <http://dx.doi.org/10.1093/jhmas/48.1.68>.
8. de Oliveira-Souza R, Tovar-Moll F. The unbearable lightness of the extrapyramidal system. *J Hist Neurosci* 2012;21:280–292, doi: <http://dx.doi.org/10.1080/0964704X.2011.595652>.
9. Wilson SAK. Progressive lenticular degeneration: A familial nervous disease associated with cirrhosis of the liver. *Brain* 1912;34:295–509, doi: <http://dx.doi.org/10.1093/brain/34.4.295>.
10. Coplan J, Guger JJ, Tasleem H. Tardive dyskinesia from atypical antipsychotic agents in patients with mood disorders in a clinical setting. *J Affect Disord* 2013;150:868–871, doi: <http://dx.doi.org/10.1016/j.jad.2013.04.053>.
11. Suzuki T. Which rating scales are regarded as ‘the standard’ in clinical trials for schizophrenia? A critical review. *Psychopharmacol Bull* 2011;44:18–31.