Chapter 11: Approach to Movement Disorders in Neuropsychiatry

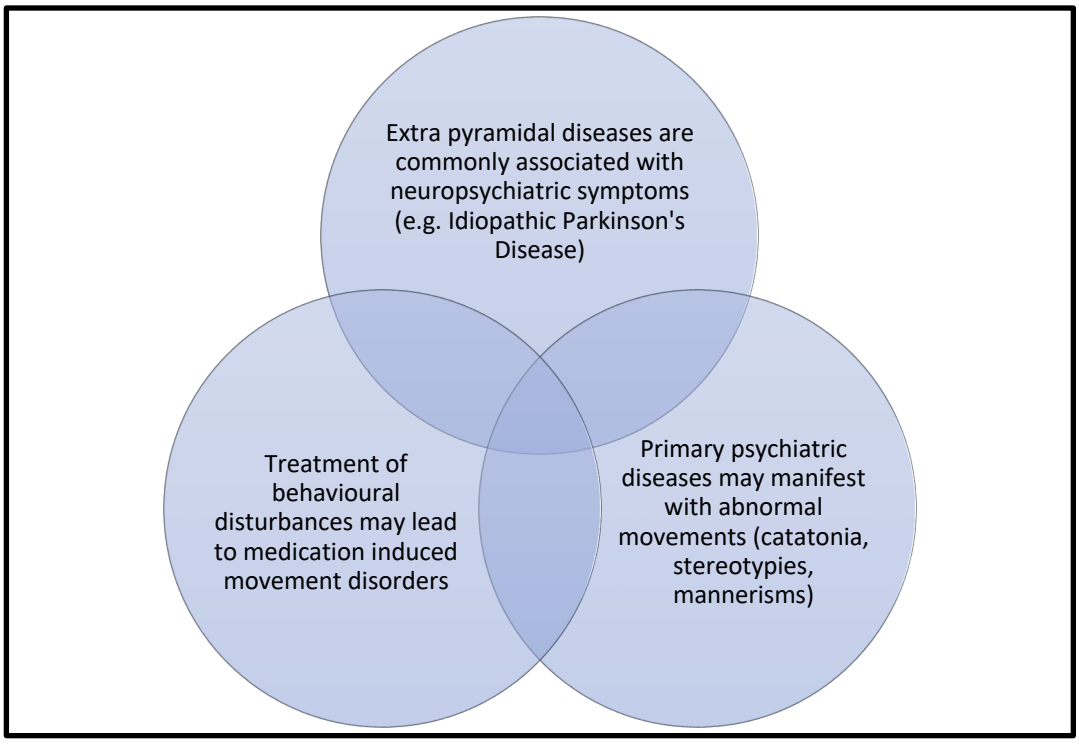
Ingrid Eloff
[Weskoppies Hospital, Department of Psychiatry, Pretoria University.
ingridgeeske@gmail.com]

Reviewed by
John A. Joska
[HIV Mental Health Research Unit, Division of Neuropsychiatry, Groote Schuur Hospital and University of Cape Town. John.Joska@uct.ac.za]

Introduction

- Movement disorders is an umbrella term encompassing a range of neurological diseases of the motor system of the brain. A movement disorder may arise from any interruption / dysregulation of the cortical-subcortical motor circuit. In psychiatry, the term movement disorder (MD) is often seen as synonymous with basal ganglia (extrapyramidal) pathology. However, there are multiple possible causes that must be considered when encountering a patient who presents with abnormal movements.
- A movement disorder may arise from multiple possible causes, including single gene defects, proteinopathy, infection, vascular brain disease, toxins or drugs.
- A movement disorder may be acute or chronic, simple or complex, focal or generalized, or static / reversible / progressive.
- They may have associated psychological, emotional or cognitive features, as primary to the disease, or secondary to its treatment or experience (stress-related).
- Movement Disorders are commonly encountered in psychiatry either as manifestations of extra-pyramidal / basal ganglia diseases; or secondary to psychiatric disorders (such as catatonia); or as the result of psychotropic treatments

Figure 1: The Relationship Between Neuropsychiatry and Movement Disorders



Classification of Movement Disorders

Movement disorders can be classified based on aetiology or phenomenological features:

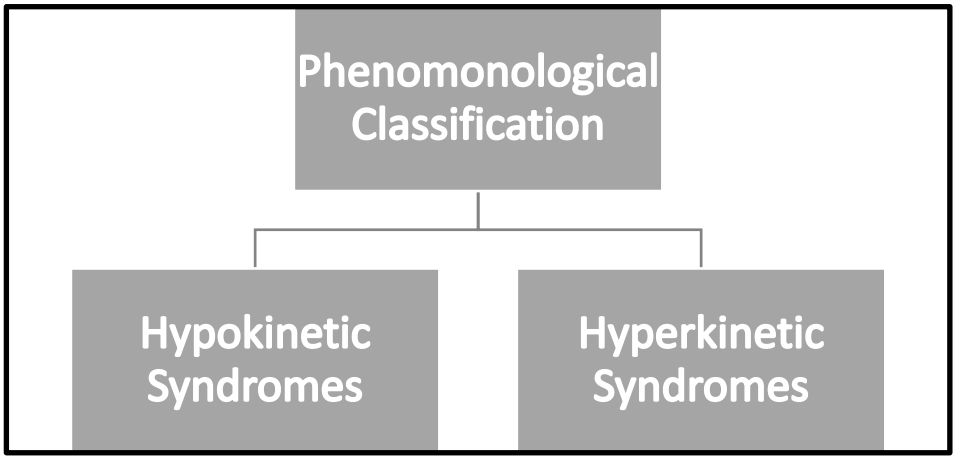
1. Aetiological Classification
    a. Primary movement disorders also known as essential or idiopathic movement disorders. These movement disorders are of unknown or uncertain origin. Examples of this include Idiopathic Parkinson's, Benign essential tremor, Primary torsion dystonia, Meige's (primary blepharospasm), task specific dystonias (writer's cramp).
    b. Secondary movement disorders: The movement disorder has an identifiable cause. examples include:
        i. Medication induced MD (tardive dyskinesia, akathisia, acute dystonia)
        ii. Neurodegenerative Disorders (Lewy Body Dementia, Multisystem atrophy, Progressive Supranuclear Palsy).
        iii. Wilson's Disease and Huntington's Disease (HD)
        iv. Metabolic and toxic causes
        v. Focal lesions such lacunar/basal ganglia strokes

2. Phenomenological Classification

We can classify abnormal movements based on the following simple description:

a. Too little movement / hypokinesia: Slowness of movement (bradykinesia) or Poverty of movement (hypokinesia).
b. Too much movement or movements that “should not be there”: Hyperkinesia/ dyskinesia. Includes: tremor, tics, dystonia, chorea, athetosis, myoclonus, stereotypies, akathisia

Figure 2: Phenomenological Classification of Movement Disorders



a. Hypokinetic syndromes

Presents with slowness of movement (bradykinesia) or poverty of movement (akinesia).

⇒ Examples include IPD and medication induced parkinsonism.

⇒ Bedside tests to elicit bradykinesia include the finger tap and foot tap exercises. You will notice: Progressive fatiguing and decrease in amplitude and number of rapid, repetitive movements.

⇒ Clinically the patient may exhibit decreased arm swing, shuffling gait and increased tone across the joints of affected limbs.

b. Hyperkinetic syndromes

⇒ Tremor: Tremor is defined as involuntary, rhythmic and oscillatory movement of a body part. It is caused by rapidly alternating contraction of antagonistic muscles. Tremor is the most common of the movement disorders but may occur in normal individuals in the form of exaggerated psychological tremor. The two broad groups of tremors are *rest* vs *action.*

- *Resting tremor* occurs in a body part that is fully supported, relaxed and not voluntarily activated. Parkinson’s disease and other parkinsonian syndromes are the most common causes of rest tremor (IPD, EPSE, DLB etc.).

- *Action tremor* occurs with voluntary muscle contraction. Action tremors is most commonly due to enhancement of physiologic tremor and therefore a medical rather than a primary neurologic cause should be sought in most cases. Action tremor is further divided into:
    i. Intention tremor, which is characterized by an increase in tremor as the affected limb approaches its target (finger nose test). Aetiology: diseases of the cerebellar cortex. Can also be seen in Wilson's, intoxication with alcohol, lithium toxicity;
    ii. Task specific kinetic tremor (such as writing); (iii) Simple kinetic tremor, where the tremor is roughly the same throughout the course of a voluntary movement.;
    iii. Postural tremor occurs when a specific position is voluntarily maintained- ams outstretched, fingers spread. Aetiology: drug toxicity, metabolic, endocrine, alcohol/benzodiazepine withdrawal, essential tremor, anxiety

⇒ Myoclonus: Myoclonus characterized by brief, shock-like involuntary movements caused by muscular contractions. Myoclonus may be focal, multifocal or generalized and vary in amplitude. Myoclonic movements have may possible causes spanning the entire spectrum of neurologic diseases; Alzheimer's (advanced stages), Huntington's Disease, medication side effects (gabapentin, lamotrigine, levodopa), lesions of the thalamus, myoclonic epilepsy syndromes, infectious and post infectious disorders, metabolic disorders.

⇒ Chorea: Chorea is characterized by brief, random, flitting jerks. To the observer, it conveys a feeling of restlessness. It appears and disappears in different parts of the body with fluidity and rapidity leading to the description of having a "mercurial nature". The patient commonly attempts to disguise the movements. Gait is commonly disturbed and presents as a lurching gait. On examination one may notice fluctuating grip strength (milk maid's grip). Heritable causes of chorea include HD, HD-like syndromes, spinocerebellar ataxias, Wilson's Disease, Chorea-acanthocytosis. Acquired causes include Basal ganglia strokes, thalamic strokes, Sydenham chorea, metabolic abnormalities, drug induced chorea.

⇒ Tics: Tics manifest as sudden, rapid movements resembling purposeful actions. Unlike myoclonic jerks, tics are stereotyped and can be voluntarily suppresses for short periods of time. Tics are often preceded by rising sense of discomfort. Unlike

dyskinetic movements and dystonia, tics cease during sleep.
Motor tics can be simple (shrugging, blinking) or complex (jumping, kicking).
Aetiology; May be normal in children and spontaneously remits in a few weeks or months. (5-20% of children), Tourette syndrome, medication (stimulants, antidepressants, antiepileptics).

⇒ Dystonia: Dystonia is a movement disorder characterized by sustained or intermittent muscle contractions causing abnormal movements or postures of 1 or more body parts. Dystonia is often initiated or worsened by voluntary actions. Dystonias can be focal (one body part), segmental (adjacent e.g., neck and arm) or multifocal (non-adjacent body parts). Examples: Torticollis, blepharospasm, oculogyric crisis, task specific dystonias (writer's cramp). Aetiology; Primary dystonias (rare): Primary torsion dystonia, Meige's, writer's cramp. Genetic: Dopa responsive dystonia (rare, onset in childhood). econdary: medication induced (dopamine receptor blockers), Wilson's Disease, Parkinsonian syndromes, basal ganglia infarcts etc.

Mixed Movement Disorders

Table 1 provides a description of how different types of movements can co-occur, and in which conditions this might happen.

Table 1: Examples of Mixed Movement Disorders and Aetiologies

Combinations	**Possible Aetiology**
Tremor and akinesia	PD
Parkinsonism, ataxia, autonomic dysfunction, spasticity, myoclonus	MSA
Vertical supranuclear gaze palsy and falls, symmetrical parkinsonism	Progressive supranuclear palsy
Akinesia, rigidity, myoclonus, dystonia, apraxia	CBD
Chorea, dystonia, bradykinesia	HD
Dystonia plus tremor	Primary dystonia
Tremor (rest and postural), dystonia, akinetic-rigid syndrome	Wilson's disease

From Abdo et al. Nature Reviews Neurology (Abdo, van de Warrenburg, Burn, Quinn, & Bloem, 2010)

Functional / “Psychogenic” Movement Disorders (FMD)- see (Aybek & Perez, 2022)

- The term “psychogenic” has fallen out of favour dude to stigmatization. FMDs are clinical syndromes defined by abnormal involuntary movements that are incongruent with a known neurologic cause. The following are often explored:
    - Distractibility: Distractibility refers to the change in tremor amplitude, direction or quality, usually a decrease or cessation of tremor, when volitionally performing other tasks.
    - Entrainability: Tremor may also be entrainable, i.e. brought into a specific rhythm.
    - Variable amplitude,
    - Suggestibility,
    - Inconsistencies and
    - the “Whack a mole” sign.
- FMDs are not uncommon: Up to 5% of movement disorders will have no identifiable cause. Functional tremor is the most common FMD (40%).
- FMDs may lie on a spectrum and may overlap with movement disorders with an identifiable cause.
- Clinical clues include Abrupt onset, rapid progression, female, early 40’s, deviates from typical clinical profile, bizarre and difficult to classify.

A Clinical Approach to Movement Disorders

Comprehensive History including.

- Onset, duration and progression of abnormal movements.
- Identifiable triggers.
- What makes it better, what makes it worse?
- Is the patient able to suppress the movements for periods of time?
- Are there associated symptoms including cognitive, mood, anxiety?
- Relationship of abnormal movements to associated symptoms.
- Family History (Huntington’s, genetic MDs), Medical History, Medication History, Substances/toxins.
- Past psychiatric history.
- Physical Examination
    - Including thorough neurological examination.
    - Description of the abnormal movement (at rest, distribution, frequency, distractibility etc.)
- Useful scale to use: AIMS (Abnormal involuntary movement scale)

Reference List

Abdo, W. F., van de Warrenburg, B. P. C., Burn, D. J., Quinn, N. P., & Bloem, B. R. (2010). The clinical approach to movement disorders. *Nature Reviews. Neurology*, *6*(1), 29–37. http://doi.org/10.1038/nrneurol.2009.196

Aybek, S., & Perez, D. L. (2022). Diagnosis and management of functional neurological disorder. *BMJ (Clinical Research Ed.)*, *376*, o64. http://doi.org/10.1136/bmj.o64