MOVING AWAY FROM FALLS:

The Relationship Between Falls and Movement Disorders

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What Is a Movement Disorder?

A neurological condition in which people move too little, or move too much

Hypokinetic Movement Disorders	Hyperkinetic Movement Disorders
Parkinsonism – due to bradykinesia and rigidity, though there may be “too much” movement as well, in the form of tremor and dyskinesia	Chorea / dyskinesia Tremor Dystonia Tics Myoclonus Ballismus

Overview of Movement Disorders

Parkinson's Disease

The second most common neurodegenerative disease, after Alzheimer's

Four cardinal features

- Bradykinesia / hypokinesia – smaller, slower movement
- Rigidity – muscle stiffness in the limbs and trunk
- Tremor – can be dominant symptom, or absent entirely
- Postural instability – later symptom; major contributor to disability

Asymmetric at onset

May or may not be associated with cognitive impairment

Bradykinesia, rigidity, and possibly tremor improve with medication.

Postural instability typically does NOT.

Other Forms of Parkinsonism

Sometimes referred to as “Atypical Parkinsonism” or “Parkinson’s Plus”

Multiple Systems Atrophy – P (MSA)

- Prominent autonomic dysfunction – orthostatic hypotension, urinary incontinence

Dementia with Lewy Bodies

- Early cognitive impairment, psychosis

Progressive Supranuclear Palsy (PSP)

- Eye movement abnormalities, early postural instability and falls. May accompany FTD.

Corticobasal Degeneration (CBD)

- Asymmetric rigidity, spasticity, sensory loss, apraxia. May accompany FTD.

Vascular Parkinsonism

- Lower body predominance, freezing, poor response to levodopa

Normal Pressure Hydrocephalus

A Potentially Reversible Form of Dementia and Ataxia

Dementia, urinary incontinence, and somewhat Parkinson's-like gait changes and ataxia

Finding on brain imaging (CT or MRI) of enlarged ventricles

Likely overdiagnosed; in the case of poor response to treatment, symptoms and structural brain changes may be caused by a neurodegenerative disorder

High-volume drainage of spinal fluid (thru lumbar puncture or lumbar drain) helps predict response to treatment

Treated by Neurosurgery with placement of a ventriculoperitoneal or ventriculoatrial shunt

Huntington's Disease

Autosomal dominant

- Child of an affected individual has 50% chance of inheriting the abnormal gene

Most obvious symptom may be chorea, but also:

- Parkinsonism
- Ataxia
- Dementia
- Changes in personality and behavior

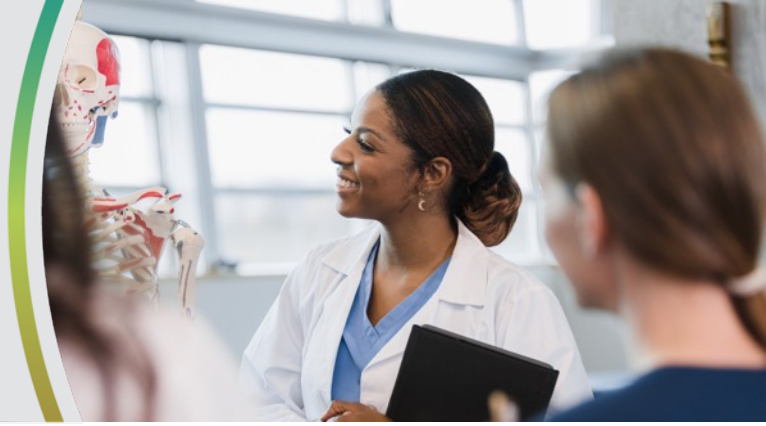
Ataxia

A condition in which the primary issue is impaired balance and/or coordination

A broad grouping, with many possible causes

Cerebellar Ataxia	Sensory Ataxia
Structural – stroke, trauma, tumor Autoimmune – paraneoplastic syndrome Iatrogenic – alcohol, medication Neurodegenerative • Hereditary – spinocerebellar ataxia • Sporadic – Multiple Systems Atrophy - C.	Myelopathy (spinal cord) – compression from degenerative arthritis or disc disease Neuropathy (peripheral nerve) – MANY causes; diabetes is a common one Myeloneuropathy (combination of the two) – Vitamin B12 deficiency

Modifying Fall Risk in Parkinson's Disease and Parkinsonism



- Shuffling
  - May respond to medication adjustment or deep brain stimulation
  - May need to time longer distances according to medication schedule
  - Remove obstacles – throw rugs, etc
  - Physical Therapy such as LSVT-Big
- Freezing
  - MAY respond to med adjustment, but can be medication-refractory
  - Compensatory techniques such as laser cane/walker, counting, metronome, tapping
- Orthostatic hypotension → lightheadedness and/or syncope
  - Reduce or remove anti-hypertensives
  - Counsel on importance of hydration, slow position changes, compression stockings
  - Addition of medication such as midodrine, fludricortisone, droxidopa

Modifying Fall Risk in Huntington's Disease and Other Choreiform Disorders

- Chorea
  - May be severe enough to affect walking balance, or even cause falls from chair or bed
  - Can be reduced with medication
    - VMAT inhibitors → tetrabenazine, deutetrabenazine
    - Atypical antipsychotics → risperidone, olanzapine for example
- Impulsivity
  - May require medical management, to address accompanying issues such as irritability or aggression
  - Family support
- Ataxia / parkinsonism
  - Physical Therapy

Modifying Fall Risk in Ataxic Disorders

- Cerebellar Ataxia
  - Unfortunately, only a few forms of cerebellar ataxia are “treatable”
    - Episodic Ataxia – several genetic subtypes – can respond to medication such as acetazolamide or dalfampridine
  - Otherwise, we rely heavily on Physical Therapy, assistive devices, BalanceWear vests
- Sensory Ataxia
  - Attempt to correct underlying cause of sensory loss – blood sugar control, vitamin replacement, etc
  - Since proprioception is affected, impairment of other sensory modalities worsens the problem
    - Vision loss, low light conditions, showering – these may be modifiable (vision correction, night lights, grab bars, etc)
    - Vestibular impairment such as BPPV
    - Tactile input from assistive device - cane/walker/walking stick - often very helpful