Banner Health

Movement Disorders and Mental illness

David Shprecher, DO MSci
Movement Disorders Director
Banner Sun Health Research Institute
www.bannershri.com

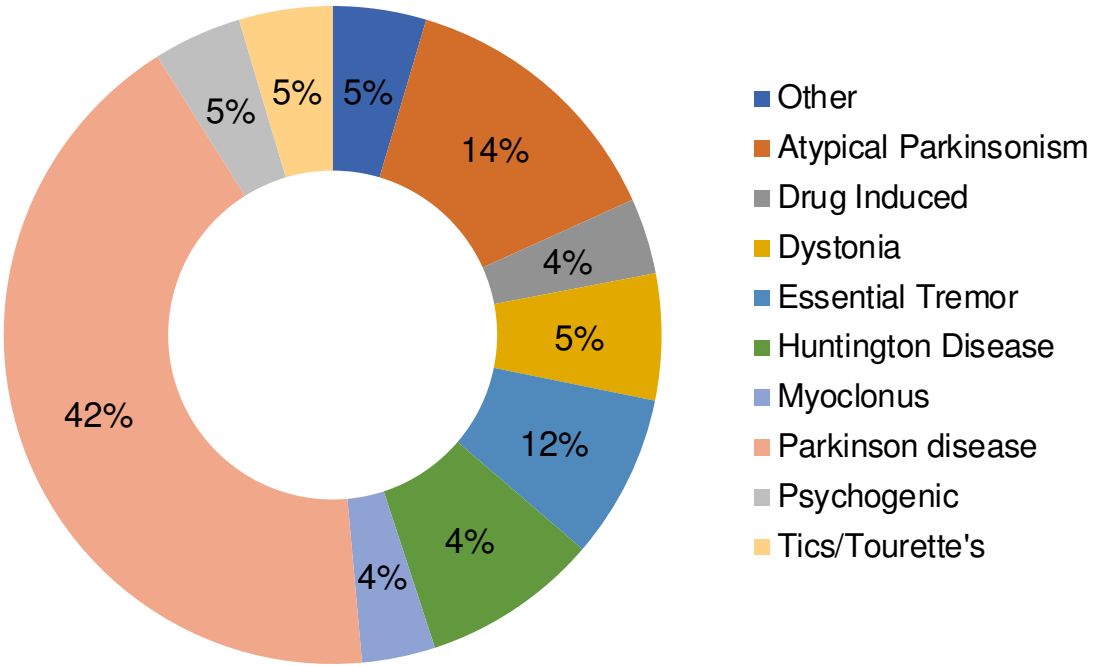
Key Topics for Discussion

1. What are Movement Disorders?
2. Which ones are commonly associated with mental illness?
3. Which ones can be enhanced or caused by medications used to treat mental illness?
2. When to involve a movement disorders neurologist

What is a Movement Disorder?

- A Neurological Condition where the primary problem is impairment in control of voluntary movement (that is not simply due to weakness, as can be seen with stroke or neuromuscular disease)

What is a movement disorder?



Neurodegenerative Disease:
A common complication of aging

- Cumulative Lifetime Risk
  - Alzheimer Disease: 10-20%
  - Parkinson disease (PD): 7%
    - Age >65: prevalence 1-2%
    - Age >80: prevalence >3%
- In the world's 10 most populated nations
  - 6.9 million individuals with PD in 2015
  - Projected: > 14 million by 2040

Wright Willis et al. Neuroepidemiology 2010; 34:143-151.
Driver et al. Neurology 2009;72:432-438.
de Rijk MC et al. Neurology 1995;45:2143-2146.
The Parkinson Pandemic-A Call to Action. JAMA Neurol. 2018 Jan 1;75(1):9-10. doi: 10.1001/jamaneurol.2017.3299.

What is “parkinsonism?”

- Motor Symptoms
  - Tremor (present at rest, improved w action)
  - Bradykinesia (Slowness of movement)
  - Rigidity (Stiffness, or resistance of the limbs to passive movement)
  - Postural Instability (Impaired balance)

Parkinson disease

- Motor symptoms (parkinsonism)
- Absence of “red flags”
  - Offending medications
  - Early, severe falls; orthostatic hypotension
- Dementia is usually a later problem

What is Lewy body dementia?

The 2nd most common neurodegenerative cause

- Parkinson disease with dementia (PDD)
  - Parkinsonism
  - Later dementia
- Dementia with Lewy bodies (DLB)
  - Early Dementia (in the first year)
  - Parkinsonism, cognitive fluctuations, hallucinations, dream enactment
- Collectively, “Lewy body dementia” (LBD)

Lewy body dementia: Not just dementia

- Neuroleptic sensitivity
  - Anti-psychotics (haloperidol, risperidone, olanzapine, aripiprazole)
  - Anti-emetics (metoclopramide, prochlorperazine, promethazine)
- Motor symptoms
- Non-levodopa responsive symptoms
  - Softer voice, trouble swallowing, drooling
  - Nonmotor

Which symptom is seen in 50% or more of PD patients?

A. Impaired sense of smell

B. Cognitive decline

C. Mood/anxiety disorders

D. Hallucinations/delusions (psychosis)

E. All of the above

Key Features Differentiating Hyperkinetic Movement Disorders

Movement	Stereo-typed	Rhythmic	Premonitory sensations	Suppressible	Continuous	Persist in Sleep
Tics	+	-	+	+	-	+
Myoclonus	+/-	+/-	+/-	-	-	+/-
Dystonia	+/-	-	-	-	+/-	-
Chorea	-	-	-	-	+	-
Stereotypy	+	+	-	+/-	+/-	-
Tremor	+	+	-	-	+/-	-
Functional	+/-	-	+/-	+/-	+/-	+/-

Shprecher D. Tics and Tourette's. Non-Parkinsonian Movement Disorders. Barton B and Hall D. Wiley Online Library. 27 Dec 2016.

Banner Research

Tic Characteristics

1. Mimic normal coordinated movement
2. Occur out of a background of normal motor activity
3. Not constantly present
4. Vary in intensity
5. Lack rhythmicity
6. Voluntarily suppressible
7. Usually characterized by a premonitory sensation

Banner Research

Primary Tic Disorders

- Tourette syndrome
  - Multiple motor and least one vocal tic
  - Onset in childhood
  - Total of at least one year duration
- Chronic Motor Tic
- Chronic Phonic (vocal) Tic

Banner Research

Psychiatric Comorbidities

- Any psychiatric: 86% (57% 2 or more)
- Obsessive-compulsive 66%
- Attention-deficit/hyperactivity 54%
- Mood 30%
- Anxiety 36%
- Disruptive behavior 29%

Lifetime Prevalence, Age of Risk, and Genetic Relationships of Comorbid Psychiatric Disorders in Tourette Syndrome. M Hirschtritt et al for the Tourette Syndrome Association International Consortium for Genetics, JAMA Psychiatry, 2015.

Banner Research

Chorea

- Involuntary, brief, irregular movements that flow randomly from one body part to another
- May be challenging to differentiate from tardive stereotypy
  - Less rhythmic
  - More random, flowing in nature

Huntington's Disease: The Most Common Hereditary Neurodegenerative Disease

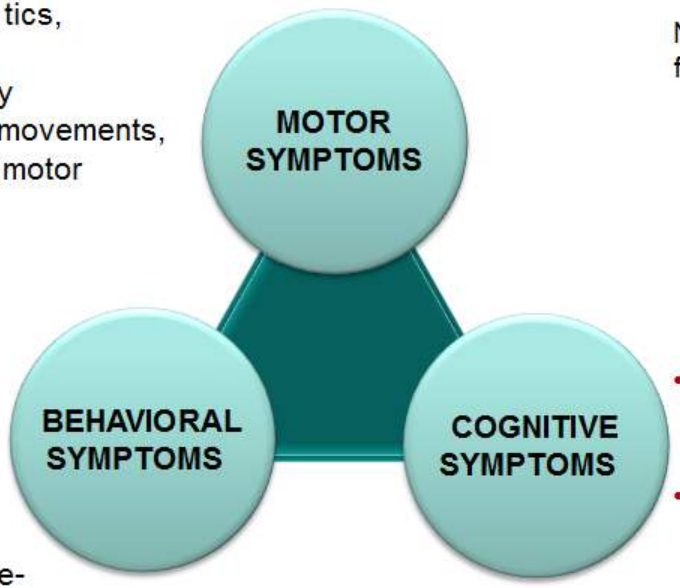
- Heredity
  - Autosomal Dominant (50% chance)
- Prevalence
  - 1:10,000 affected, 1:2000 at risk
  - Average age of onset 30-50
  - Average Lifespan 18 years (from onset of symptoms)

Free Download: https://hdsa.org/product/a-physicians-guide-to-the-management-of-huntingtons-disease-3rd-edition/

Banner Research

HD Triad of Symptoms[1]

- Involuntary movements: chorea, dystonia, tics, myoclonus
- Impaired voluntary movements: eye movements, manual dexterity, motor impersistence



Note: Symptoms may vary from person to person

- Affective illness, depression, suicide, psychosis, obsessive-compulsive, personality and behavioral changes, sleep disorders

- Reduced speed and flexibility of mental processing[2]
- Difficulty planning and prioritizing

1. Marshall FJ. In: Koller R, Watts W, eds. Movement Disorders: Neurologic Principles and Practice;2004:589–96.
2. Rosenblatt A. In: Nance M, et al. A Physician's Guide to the Management of Huntington's Disease. Third Edition 5–13;2011.

Essential Tremor

- Prevalence 5% by age 65, 20% by age 80+
- Tremor in both hands
- Improved at rest, worse with action
- May also affect head, face, voice

Consensus Statement on Classification of Tremors from the Task Force on Tremor of the IPMDS. Bhatia et al. Mov Disord . 2018 Jan;33(1):75-87. doi: 10.1002/mds.27121.

Psychiatric Medications That Cause or Worsen tremor

- Most severe
  - Valproic acid (divalproex, Depakote)
  - Lithium
- Enhanced physiologic (faster, mainly in fingers)
  - Tricyclic antidepressants
  - Serotonin reuptake inhibitors
  - Serotonin norepinpherine reuptake inhibitors
  - Steroids, anti rejection drugs
- Treatment
  - May require changes/dose reduction to psych meds
  - If also present, then Essential Tremor medications may help
    - Propranolol, atenolol, primidone, topiramate

Antipsychotic Medications- A Double Edged Sword

- Block dopamine receptors (resulting in risk of movement disorders)
- FDA Approved for schizophrenia, depression, bipolar disorder treatment
  - Agitation in Alzheimer's (Rexulti)
- Often used off label
- Only two drugs lack dopamine blocking activity
  - Nuplazid (pimavanserin)
    - For Parkinson disease psychosis
  - Cobenfy (xanomeline-trospium)
    - Only approved for schizophrenia

Antipsychotic induced movement disorders

Symptom	Acute (dystonic reaction)	Dose Dependent	Withdrawal Emergent	Delayed onset (tardive)
Dystonia	+	-	-	+
Parkinsonism (rest tremor)	-	+	-	*
Akathisia	-	+	-	+
Dyskinesia	-	-	+	+

Waln O, Jankovic J. An update on tardive dyskinesia: from phenomenology to treatment. Tremor Other Hyperkinet Mov (N Y). 2013 Jul 12;3

Acute Dystonia

- Prophylaxis: *Short term* treatment with benztropine 2mg/d for one week
  - Reduces risk when using typical antipsychotics
- Treatment:
  - Withdraw offending agent
  - Treat with antihistamine/anticholinergic

Winslow RS, Stillner V, Coons DJ, Robison MW. Prevention of acute dystonic reactions in patients beginning high-potency neuroleptics. Am J Psychiatry. 1986 Jun;143(6):706-10. doi: 10.1176/ajp.143.6.706.

Drug-Induced Parkinsonism

- Causes REST tremor, bradykinesia, rigidity (shuffling, drooling when severe)
- May take 6-12 months to resolve off drug
- Delayed onset (months to years) may raise concern for Parkinson disease
  - DaTscan may be used to differentiate
- Treatment options:
  - Switch to LESS potent agent
  - Amantadine or benztropine

Tardive Syndromes

- Risk is proportional to dose and duration of agents that reduce D2 receptor activity
  - Antagonist, inverse agonist or partial agonist
- Diagnosis requires prolonged exposure
  - 3 months (1 if age 60+)
- Clinicians often Screen/monitor with an Abnormal Involuntary Movements Scale

TD risk factors

- Patient Factors
  - Age 60+
  - Postmenopausal women
  - Substance abuse
  - Diagnosis of mood disorder
  - *Tourette syndrome may be protective
    - If DRBA used for tics
- Treatment Factors
  - Duration/Potency of antipsychotic exposure
  - Prior history of EPS

Vardar MK, Ceylan ME, Ünsalver BÖ. Assesment of Risk Factors for Tardive Dyskinesia. Psychopharmacol Bull. 2020 Jul 23;50(3):36-46.
Mukherjee S et al Persistent tardive dyskinesia in bipolar patients. Arch Gen Psychiatry. 1986 Apr;43(4):342-6. doi: 10.1001/archpsyc.1986.01800040052008
Divac N et al. Biomed Res Int. 2014;2014:656370. doi: 10.1155/2014/656370

TD Prevalence

- Cumulative incidence 4-5% annualy
- Overall Prevalence 20-30%
  - First Generation Antipsychotics: 30%
  - SGA (unspecified FGA use) 20.7%
  - Second Generation (no prior FGA) 7.2%

Carbon et al. J Clin Psychiatry. 2017;78(3).
Cloud LJ et al Neurotheraputics 2014;11: 166-176

Banner Research

TD Treatment

- Discontinue anticholinergics
  - benztropine (Cogentin), trihexyphenidyl (Artane)
  - May treat parkinsonism but worsen TD
- FDA Approved:
  - Ingrezza (valbenazine) or Austedo (deutetrabenazine)
- Off label: amantadine, tetrabenazine
- For tardive dystonia: botulinum toxin
- For very severe tardive dystonia: deep brain stimulation

Bhidayasiri R, et al. American Academy of Neurology.. Evidence-based guideline: treatment of tardive syndromes: report of the Guideline Development Subcommittee of the American Academy of Neurology. Neurology. 2013 Jul 30;81(5):463-9.

Waln O, Jankovic J. An update on tardive dyskinesia: from phenomenology to treatment. Tremor Other Hyperkinet Mov (N Y). 2013 Jul 12;3.

Banner Research

When to Consult Movement Disorders Neuro?

- Diagnosis/Co-management of suspected neurological movement disorders
- Diagnosis/treatment recommendations for drug induced movement disorders

Services at Banner Sun Health Research Institute

- Movement Disorders Neurology
  - Tourette Association of America Center of Excellence without walls (collaboration with PCH)
- Memory Clinic
- Neuropsychological testing services
- Social Work/Counseling
- Clinical Trials
- Brain and Body Donation Program
- Center for Healthy Aging

What MDS Programs Exist in Phoenix?

- Banner Health (Sun City, Phoenix)
- Barrow Neurological Institute
- Mayo Arizona
- Honor Health
- Private Practices
  - Virgilio Evidente (Scottsdale)
  - Foothills Neurology (Ospina)- Phoenix
  - Neurology Associates (Marianne De Lima)-Chandler

Tips on Advocating for Patients

- Don’t be put off by long wait times
  - Ask about cancellation wait lists
    - Several new openings arise every week
- Facilitate sharing of records and contact information between clinicians
- Ask about telehealth follow up care

Q&A