Parkinson’s Disease and Parkinsonism

Video guide in diagnosis
HOW IS A MOVEMENT DISORDER SPECIALIST LIKE A BIRD WATCHER?
- Tremor
  - Rest
  - Postural
- Bradykinesia
- Rigidity
- Postural reflex impairment
PD Subtypes

- Tremor-predominant
  - Classic PD
  - Benign Tremulous Parkinsonism
- Akinetic-Rigid
- Postural Insufficiency and Gait Disturbance (PIGD)
  - Rising from chair, gait and posture
  - Freezing of gait, speech, swallowing
Tremor-predominant PD
Akinetic-Rigid PD
Postural Instability and Gait Dysfunction (PIGD)
Parkinsonism

- Tremor
  - Rest
  - Postural
- Bradykinesia
- Rigidity
- Postural reflex impairment

Any Two Clinical Signs
Diagnosing Parkinson's disease
United Kingdom PD Society Brain Bank Criteria

Step 1
- Bradykinesia
- At least 1...
  - Rigidity
  - 4-6 Hz rest tremor
  - Postural instability
    - Not visual
    - Not vestibular
    - Not cerebellar
    - Not sensory

Hughes et al. JNNP;55:181-184
Diagnosing Parkinson's disease

Step 2—exclusions

- Neuroleptics, anti-emetics
- Stepwise progression
- Cerebellar signs
- Early, severe ANS
- Early, severe dementia
- Babinski sign
- Tumor/hydrocephalus
- Supranuclear gaze palsy

“Soft” exclusions

- Dopa unresponsive
- Head injuries
- Familial (?)
Diagnosing Parkinson's disease

Step 3—supportive features

- Unilateral onset
- Rest tremor
- Progressive disorder
- Persistent asymmetry, worse on onset side
- 70-100% response to levodopa
- Severe levodopa-induced dyskinesias
- > 5 year history levodopa-responsiveness
- Disease course ≥ 10 years
Levodopa challenge

• MUST explain to patient what to expect
  – Time medication should be effective
    • One hour after dose, lasting about 3-4 hours
  – What symptoms should improve

• MUST give adequate challenge
  – Start with 25/100 TID
  – Increase to 50/200 if no effect
  – If patient does not experience nausea, you are not getting high enough dose.
  – Some patients need extra carbidopa to block dopa decarboxylase
  – Some patients need entacapone or even tolcapone to inhibit COMT.
L-Dopa = levodopa
DDC = dopa decarboxylase
COMT = catechol-O-methyltransferase
MAO-B = monoamine oxidase B
Layman’s view of PD
Essential Tremor
Degenerative Parkinsonisms

- Parkinson's disease
  - Hereditary forms
  - Sporadic
- Multiple system atrophy (MSA)
- Diffuse Lewy body disease
- Progressive supranuclear palsy (PSP)
- Corticobasal degeneration
- Frontotemporal dementia with parkinsonism
- Pallidal degenerations
- Alzheimer disease
- Spinocerebellar ataxias (types 2,3,17)
Degenerative Parkinsonisms

- Huntington's disease
  - Juvenile presentation
  - Later in disease course
- Wilson disease
- Acquired hepatolenticular degeneration
- Parkinsonism Dementia Complex of Guam
- Neuroferritinopathy
- Basal Ganglia calcification
- Gaucher’s disease
- GM1 gangliosidosis
- Chediak-Higashi disease
- Chorea-acanthocytosis
PARKINSONISM

IF THE EARLIEST SYMPTOM IS:

MEMORY LOSS

FALLING

BEHAVIOR CHANGE

FAINTING

LEWY BODY DEMENTIA (LBD)

PROGRESSIVE SUPRANUCLEAR PALSY/CORTICOBASAL DEGENERATION (PSP/CBD)

FRONTOTEMPORAL DEMENTIA (FTD)

MULTIPLE SYSTEM ATROPHY (MSA)
LEWY BODY DEMENTIA (LBD)

- 10 YEARS AGO, J.W. RETIRED EARLIER THAN PLANNED AT 65 BECAUSE COULD NOT MULTI-TASK AND HAVING ISSUES WITH VISUOSPATIAL ORGANIZATION. HAD ACTIVE DREAMING.

- 5 YEARS AGO DIAGNOSED WITH EARLY DEMENTIA

- 3 YEARS AGO DIAGNOSED WITH “PARKINSON’S DISEASE” BECAUSE OF BRADYKINESIA, MILD RIGIDITY, BUT DOES NOT HAVE A RHOBUST RESPONSE TO MEDICATIONS.

- NOW (age 70) HAVING HALLUCINATIONS AND DELUSIONS ABOUT 40 PEOPLE WITHOUT LEGS LIVING IN HIS HOUSE.
1. PHYSICALLY, J.W. HAS MILD-MODERATE BRADYKINESIA, WALKS SLOWLY BUT WITHOUT ASSISTANCE

2. MENTALLY, CAN HOLD A CONVERSATION, FEED AND CLOTHE HIMSELF, DO MOST NORMAL ACTIVITIES, BUT MUST HAVE SUPERVISION.
LEWY BODY DEMENTIA TREATMENT*

1. PARKINSON’S DISEASE MEDICATIONS
   - Can worsen psychosis
2. MEMORY MEDICATIONS
   - Can worsen psychosis
3. ANTIPSYCHOTIC MEDICATIONS
   - With caution

*LBD patients have unusual sensitivity to ALL medications and can have delirium triggered by cardiac medications, antibiotics, etc. Watch for paradoxical responses, as well.
Antipsychotic medication for ANYONE with parkinsonism

- quetiapine (Seroquel)
- clozapine (Clozaril)

*NOTE: The following medications are not recommended for use in treating parkinsonism.*

- olanzapine (brand name Zyprexa)
- risperidol (brand name Risperdal)
PARKINSONISM

IF THE EARLIEST SYMPTOM IS:

- MEMORY LOSS → LEWY BODY DEMENTIA (LBD)
- FALLING → PROGRESSIVE SUPRANUCLEAR PALSY/CORTICOBASAL DEGENERATION (PSP/CBD)
- BEHAVIOR CHANGE → FRONTOTEMPORAL DEMENTIA (FTD)
- FAINTING → MULTIPLE SYSTEM ATROPHY (MSA)
PROGRESSIVE SUPRANUCLEAR PALSY

4 YEARS AGO (AGE 60) J. R. WAS INTERMITTENTLY FALLING BACKWARDS

1 YEAR AGO STARTED HAVING DOUBLE VISION

6 MONTHS AGO DIAGNOSED WITH “PARKINSON’S DISEASE,” BUT DOES NOT RESPOND TO MEDICATIONS.

CURRENTLY HAS SEVERE IMBALANCE

CORTICOBASAL DEGENERATION

4 YEARS AGO (AGE 60) B.P. NOTICED POOR DEXTERITY IN LEFT HAND

3 YEARS AGO TOLD SHE HAD A “STROKE”

2 YEARS AGO STARTED FALLING

6 MONTHS AGO DIAGNOSED WITH “PARKINSON’S DISEASE,” BUT DOES NOT RESPOND TO MEDICATIONS.

CURRENTLY HAS LIMITED USE OF LEFT ARM
PSP
IMAGING FINDINGS

https://radiopaedia.org/articles/progressive-supranuclear-palsy-1
CBD

Neurology Journal
1. CARBIDOPA-LEVODOPA MAY HELP INITIALLY AND “A LITTLE”
2. PHYSICAL, OCCUPATIONAL AND SPEECH THERAPIES ARE CRUCIAL
3. WEIGHTED WALKERS, FEEDING TUBES, SPECIAL EYE GLASSES CAN HELP
PROGNOSIS

- PSP: 6-8 YEARS FROM SYMPTOM ONSET

- CBD: 10-? YEARS FROM SYMPTOM ONSET
PARKINSONISM

IF THE EARLIEST SYMPTOM IS:

- MEMORY LOSS
- FALLING
- BEHAVIOR CHANGE
- FAINTING

- LEWY BODY DEMENTIA (LBD)
- PROGRESSIVE SUPRANUCLEAR PALSY/CORTICOBASAL DEGENERATION (PSP/CBD)
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- MULTIPLE SYSTEM ATROPHY (MSA)
FRONTOTEMPORAL DEMENTIA (FTD)
(FORMERLY KNOWN AS PICK’S DISEASE)

Second only to ALZHEIMER’S DISEASE (AD) in prevalence, FTD accounts for 20% of young-onset dementia cases.

Signs and symptoms typically manifest in late adulthood, more commonly between the ages of 55 and 65, approximately equally affecting men and women.
FTD SYMPTOMS

- Disinhibition, poor impulse control
- Apathy
- Loss of sympathy or empathy
  - Behavioral Variant type
- Loss of semantic understanding
  - (Primary Progressive Aphasia type)
- Memory loss is negligible
- Loss of social awareness
1 YEAR AGO (AGE 56), W.L. STARTED EMBARRASSING WIFE AT PARTIES

8 MONTHS AGO DID NOT SEEM TO CARE WHEN HER BROTHER DIED SUDDENLY

6 MONTHS AGO NOTICED A TREMOR IN RIGHT HAND AND DIAGNOSED WITH “PARKINSON’S DISEASE,” BUT DID NOT RESPOND TO MEDICATIONS

Currently, physician must advise patient that no kissing or hugging will take place (boundaries have to be re-established each visit).
bvFTD, apathetic

- 1 YEAR AGO (AGE 56) T.C. STOPPED GOING TO SOCIAL EVENTS, DENIES DEPRESSION

- 6 MONTHS AGO NOTICED A TREMOR IN RIGHT HAND AND DIAGNOSED WITH “PARKINSON’S DISEASE,” BUT DID NOT RESPOND TO MEDICATIONS

- CURRENTLY, SISTER MUST CONSTANTLY MOTIVATE AND TELL HIM WHEN TO BATHE, WHEN TO EAT, OR HE WOULD SIT IN RECLINER FOR DAYS.
FRONTOTEMPORAL DEMENTIA (FTD)

Treatment

1. LEVODOPA CAN HELP PHYSICAL SYMPTOMS
2. MEMORY MEDICATIONS CAN HELP A LITTLE
   - Caution, as can increase impulsivity
3. BEHAVIOR MEDICATIONS HAVE LIMITED EFFECT, ESPECIALLY ON APATHY
PARKINSONISM

IF THE EARLIEST SYMPTOM IS:

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- FALLING
- BEHAVIOR CHANGE
- FAINTING

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- PROGRESSIVE SUPRANUCLEAR PALSY/CORTICOBASAL DEGENERATION (PSP/CBD)
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- MULTIPLE SYSTEM ATROPHY (MSA)
MULTIPLE SYSTEM ATROPHY (MSA)

- 3 YEARS AGO, AT AGE 52, T.M. STARTED HAVING DIZZINESS
- 2 YEARS AGO HAD TO SEE A UROLOGIST FOR BLADDER PROBLEMS
- 1 YEAR AGO STARTED FAINTING AND DIAGNOSED WITH PARKINSON’S DISEASE DUE TO RIGIDITY
MULTIPLE SYSTEM ATROPHY (MSA)

- Treatment is supportive only, levodopa has minimal, if any effect.
  - Midodrine, florinef, droxidopa for orthostatic hypotension.
- Prognosis is poor: average 6 years life expectancy after diagnosis
- Most are wheelchair-bound due to the severe drops in blood pressure
MSA MRI findings:
Sensitivity of 85% and specificity of 100% to differentiate between MCA and PD

Hot cross bun sign  hyperintensities of middle cerebellar peduncle  hyperintensities of putamen rim

The End