

Symptoms and Diagnosis of Parkinson Disease

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IT'S HOW MEDICINE SHOULD BE®

Who are we? What is our training?

- Medical school (MD)
 - 4 years
- Internship
 - 1 year
- Residency in Neurology
 - 4 years
- Fellowship in Parkinson Disease and Movement Disorders
 - 2 years
- Formal training in Research (MS or PhD)
 - 2-5 years

Parkinson Disease

12th century – egyptian paper reports drooling King

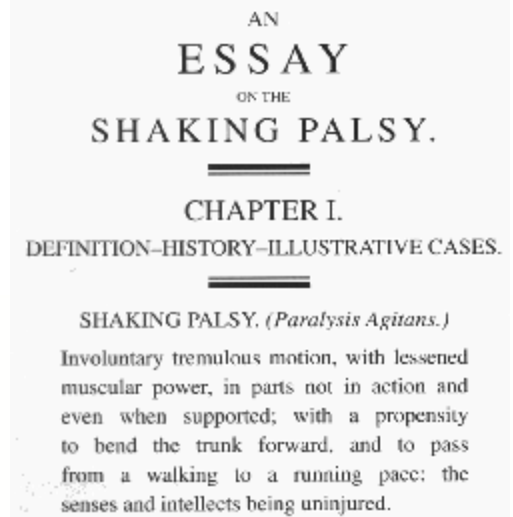
Bible – references to tremor

10th century – disease with tremor, lack of movement,
drooling

Galen – rest tremor, postural changes, paralysis

John Hunter – described disease

1817 – British physician James Parkinson
wrote pivotal essay



Parkinson disease

- Cardinal features:
 1. Tremor: resting
and/or postural
 2. Rigidity
 3. Bradykinesia
(slowness of movement)
 4. Postural instability
problems with balance)



Parkinson disease

- Other features:
 - Decreased facial expression
 - Small handwriting
 - Shuffling gait
 - Low speech volume, monotonous speech
 - Hesitation in initiating movements

Diagnosis of Parkinson Disease

- Category of movement
 - Not moving enough (hypokinetic)
 - Parkinsonism
 - Moving too much (hyperkinetic)
 - tics
 - essential tremor
 - chorea
 - dystonia
 - myoclonus

Diagnosis of Parkinson Disease

- Slowness of movement and
 - One of the following:
 - Muscular rigidity
 - Rest tremor
 - Balance difficulty
- Supportive of the diagnosis
 - Excellent response to levodopa
 - Onset on one side
 - Disease for 10 years or more
 - Progressive symptoms

Forms of Parkinson Disease

- Tremor form:
 - Generally preserved mental status
 - Earlier age at onset
 - Slower progression
- Postural instability and gait difficulty form (PIGD):
 - More severe slowness
 - Dementia
 - Faster progression

Parkinsonian Disorders

Primary

Secondary

Atypical Parkinsonian Disorders

Parkinson Disease

Sporadic

Familial

Sporadic

Familial

Progressive supranuclear palsy
Corticobasal degeneration
Multiple system atrophy
Dementia with Lewy bodies

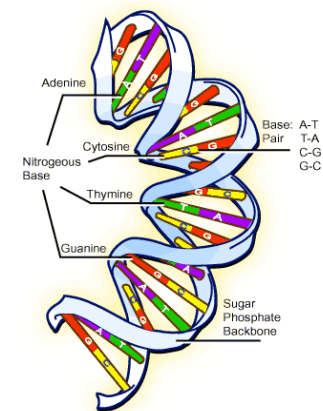
Frontal temporal dementia with parkinsonism
Spinocerebellar ataxia
Rigid form of Huntington disease
Wilson's disease
Neurodegeneration with brain iron accumulation

Medications
Endocrine diseases
Heavy Metals
Infections
Vascular disease
Toxins

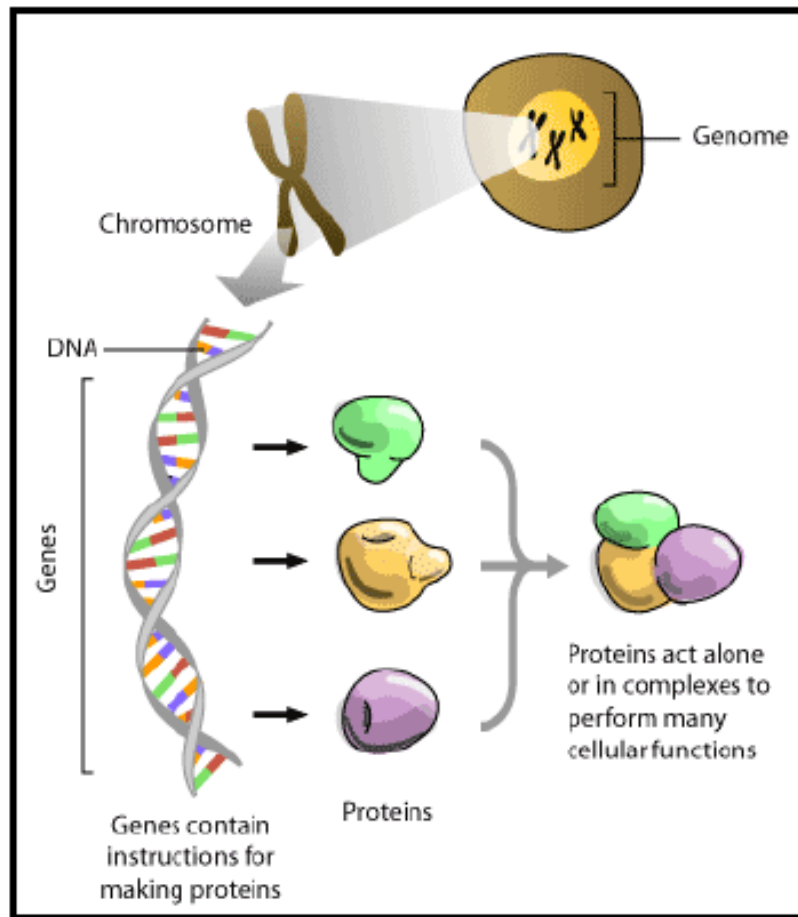
Adapted from Litvan, Atypical Parkinsonian Disorders, 2005

Genes in Parkinson Disease

- About 10% of Parkinson disease runs in families
- More likely with early onset (<40 years)



What makes one cell different from another?



DNA = “the life instructions of the cell”

Gene = segment of DNA that tells the cell how to make a certain protein.

Allele = one of two or more different versions of a gene

Parkinson Genetics

	Gene	Inheritance	Onset
Park 1	α -synuclein	Dominant	All
Park 2	PARKIN	Recessive	Early
Park 3	unknown	Dominant	Late
Park 4	SNCA triplication	Dominant	Early
Park 5	UCH-L1	Dominant	Late
Park 6	PINK 1	Recessive	All
Park 7	DJ-1	Recessive	Early
Park 8	LRRK 2	Dominant	Late
Park 9	unknown	Recessive	Early
Park 10	unknown	Dominant	Late
Park 11	unknown	Dominant	Late
GBA	Glucocerebro -sidase	Recessive	Early

Genes in Parkinson Disease

- When to test?:
 - Early onset (younger than 40):
 - Approx. 17% chance of finding a gene mutation
 - PARKIN, Pink-1, LRRK2, GBA
 - Late onset:
 - Approx 7% chance of finding a mutation
 - LRRK2
 - Consider other testing based on ethnicity or race

Prevalence of Parkinson Disease



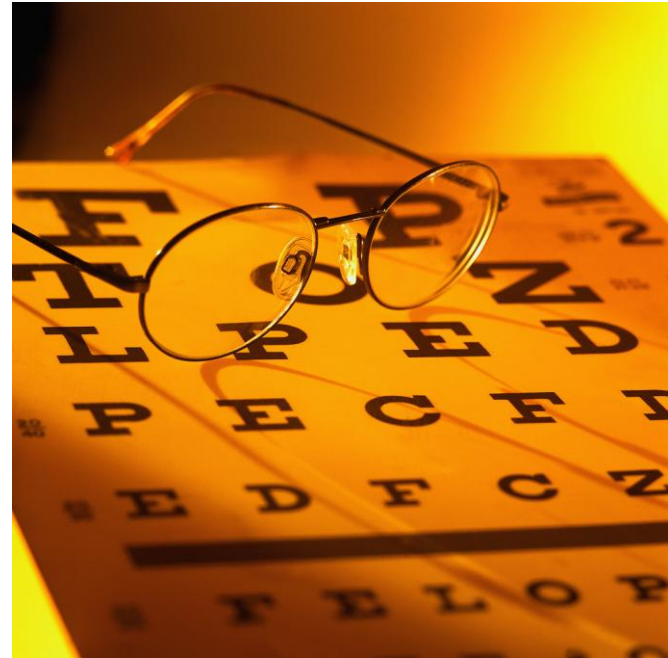
- 102/100,000 – 190/100,000 US
- 21,000 PD patients in Illinois
- 2% aged 65 and above

Non-motor signs of PD

- Blood pressure instability
- Sweating problems
- Sexual impotence
- Urinary difficulties
- Drooling
- Constipation
- Choking
- Visual disturbances
- Anxiety
- Pain/cramping
- Fatigue
- Sensory deficits
- Dementia
- Depression
- Psychosis
- Sleep disorders
- Impulse control disorders

Visual disturbances

- Difficulty reading
- Skip lines or words
- Blurred or double vision
- Visual hallucinations
- Dry eyes
- Excessive blinking



Visual dysfunction in the brain

- Color discrimination decreased
- Visual processing in the brain abnormal
- Visual spatial dysfunction

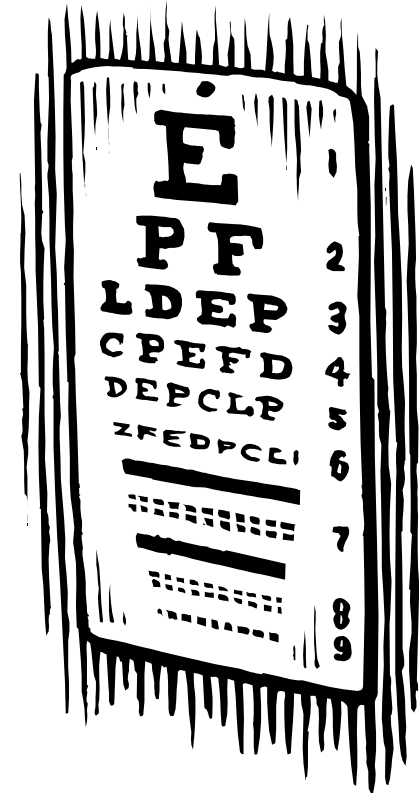


Eye movement abnormalities

- Difficulty converging eyes
- Impaired pursuit
- Quick movements of the eyes
 - Slowed
 - Don't make it target
- Impaired upgaze
- Defective eye-hand coordination

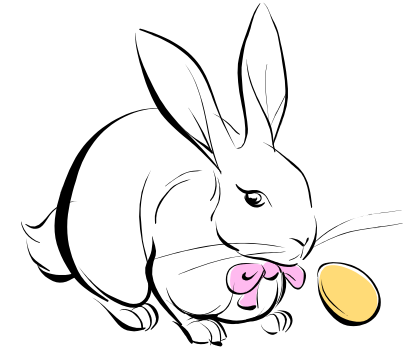
Visual disturbances

- Have optometrist check visual acuity
- Consider seeing ophthalmologist for prisms
- Neuro-ophthamology consult if still having problems

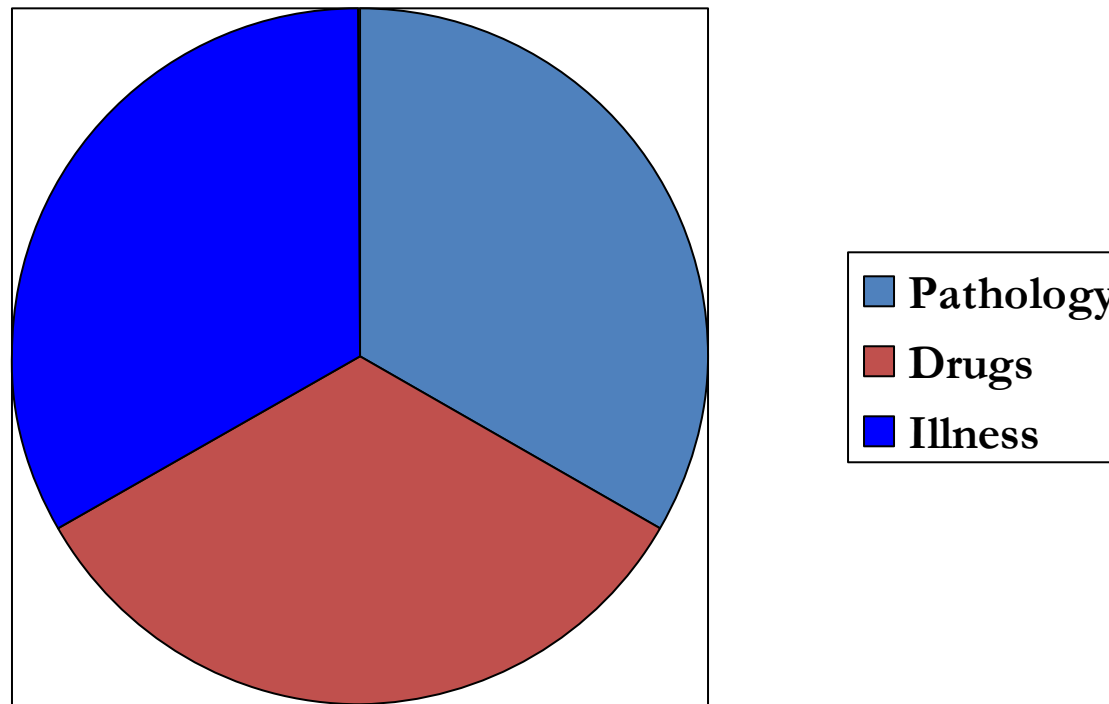


Hallucinations

- 16% of PD patients hallucinate
 - Usually visual
 - Familiar humans and animals
- More common as get older
- 10% recognize that hallucinations are not real
 - 6% have delusions or more severe symptoms



Hallucinations



Medications: anticholinergics, levodopa, dopamine agonists

Illness: infection, metabolic disturbances

Hallucinations

- Most patients know images are false
- May progress to delusions or paranoia
 - Spouse or partner is unfaithful
- Need to be treated
 - Antipsychotic medications
 - Small dose at night



Speech in PD

- Slurred speech
- Low volume
- Monotonous loudness and pitch
- Imprecise consonants
- Hesitation
- Short rushes of speech
- Variable speech rate
- Stuttering



Speech in PD

- Vocal cords are bowing –
 - Loss of muscle mass and control
- Can be worsened by DBS surgery
 - Speech pathways are close to target in brain
 - Need to discuss with the surgeon prior to surgery

Communication

- Non-verbal also affected
 - Decreased facial expression
 - Appear passive
 - Some patients have grimacing
 - Problems interpreting body language
- Techniques:
 - Look at person you are talking to
 - Eliminate background noise
 - Be patient
 - Use shorter sentences



Speech in PD

- Speech therapy
 - Lee Silverman Voice Treatment (LSVT)
 - “think loud, think shout”
 - Reading aloud, taping voice, singing aloud
- Augmentative devices



Swallowing in PD

- 36% have less saliva
- Others have excessive drooling
 - Failure to swallow saliva
 - Treatment:
 - Chew gum
 - Botox injections
 - Anticholinergic medication (small doses)

Swallowing in PD

- Choking:
 - Delayed oral delivery
 - Uncoordinated muscles
 - Reduced sensation of eating
 - Abnormal saliva production

- PD patients 6x more likely admitted to hospital with aspiration pneumonia

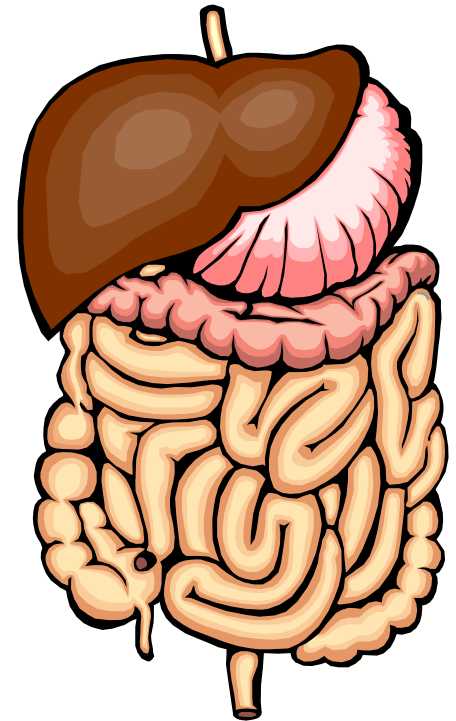


Swallowing in PD

- Techniques to improve swallowing:
 - Think swallow
 - Swallow twice after every bite
 - Small bites, sips
 - Don't use straws
 - Eat soft foods
 - Take medicines correctly
 - Don't talk with food in your mouth
 - Keep chin parallel to the table (don't lift the chin)

Bowel in Parkinson Disease

- Constipation
- Abdominal bloating
- Immobility: not moving as much
- Medications
- Reduced fluid and food intake
- Disease itself



Constipation in PD

- Malfunction of muscles of pelvic floor
- Slow transit of food in colon
- Weak abdominal strain
- Decreased rectal contraction
- Paradoxical sphincter contraction when defecating

Constipation in PD

- Drink fluids: 2 quarts daily (caffeine doesn't count)
- Eat lots of fiber (fruit, veges, whole grains)
 - Bran daily
- If you use fiber products, use with FLUIDS
- Exercise
- Avoid laxatives
- Empty bowels when you have the urge

Constipation in PD

- Medicines:
 - Try diet changes first
 - Stool softeners
 - Milk of Magnesia
 - Miralax



Leg cramps

- 50% of PD patients have pain of some kind
- Painful foot cramps
 - Frequently in younger onset patients
 - Especially when walking
 - Extension of the toe or curling of the small toes



Leg cramps

- “Off times”
 - When dopamine medicines wear off
 - Can also have burning
 - Treat by reducing off times
- Vitamin B Complex
- Work-up for other causes

Leg cramps

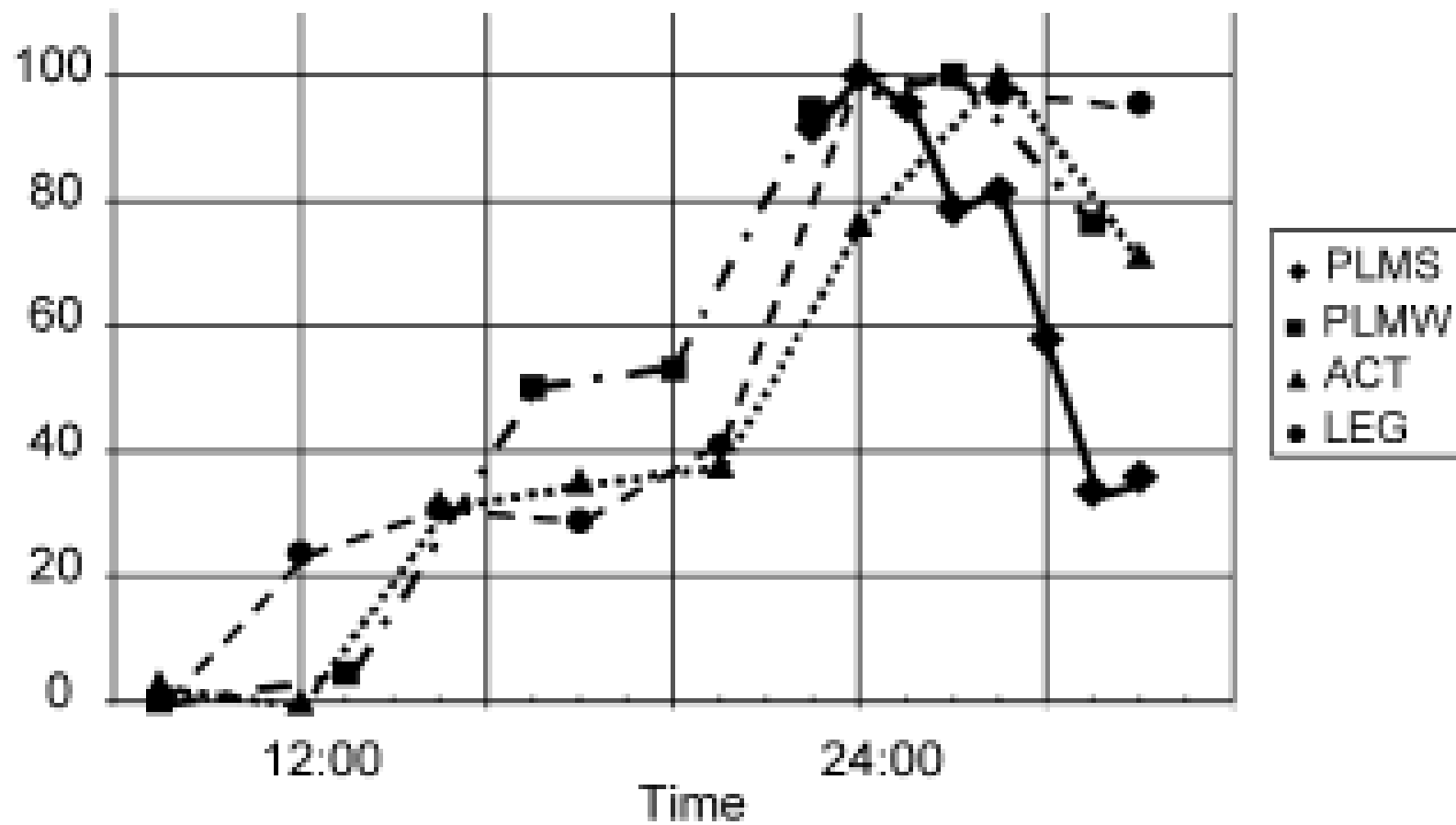
- Other causes:
 - Electrolyte abnormalities (potassium, calcium)
 - Vascular disease in the legs
 - Spine stenosis (cramping with walking)



Restless Legs Syndrome

- **1. urge to move the legs with uncomfortable or unpleasant sensations in the legs**
- **2. urge to move that worsens during periods of rest or inactivity**
- **3. urge to move partially or totally relieved by movement**
- **4. urge to move is worse in evening**

Circadian Plot



Restless Legs Syndrome

- Treat underlying causes
 - Low iron
- Medications:
 - **Ropinirole**
 - **Pramipexole**
 - **Anticonvulsants (seizure medication)**

Depression and Anxiety in Parkinson Disease

- Very common
- Depression 50%
- Anxiety disorders 40%
- Most patients need medications to treat

Rush Parkinson Disease and Movement Disorder Clinic

- Eight Parkinson Specialists
 - Two doctor trainees
 - Three nurses
 - Medical Assistant
 - Videographer
 - Six staff
-
- Schedule an appointment:
• 312-563-2030



