Medical Overview

Parkinson’s Disease

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TEAM-PD Training
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What is Parkinson’s disease?

• Neurodegenerative disease
  = Chronic and progressive
• Symptoms are motor and non-motor
• Quality of life is about disability
Epidemiology

• Statistics:
  • 1.5 million live with PD
  • 60,000 new diagnoses annually
  • Average onset age = 63
  • 15% under age 50
  • Men > Women (approx 60% vs. 40%)
Pathophysiology

- There is a loss of dopamine producing neurons in the substantia nigra.
- PD motor signs emerge after 70-80% loss of dopamine producing cells.
Mesolimbocortical pathway: ventral tegmental area (VTA) to nucleus accumbens, cortex (including the insula), and hippocampus.

Mesostriatal pathway: substantia nigra to striatum (caudate and putamen).
Gross Pathology

- Lewy Bodies (LB) are the pathologic hallmark of the disease.
- Within the LB is abnormal aggregation of the protein, alpha-synuclein.
- These LB are widespread in the brain and brainstem.
Pathology is wide spread and can affect every system

- Affects the serotonin, norepinephrine, and acetylcholine systems.
- These symptoms may appear decades earlier than motor symptoms.
- Common early symptoms: loss of smell, GI dysfunction, sleep changes, mood changes.
Braak Stages

Braak stages 1 and 2
Autonomic and olfactory disturbances

Braak stages 3 and 4
Sleep and motor disturbances

Braak stages 5 and 6
Emotional and cognitive disturbances

Via olfactory bulb
Via vagus nerve
Premotor symptoms
Motor symptoms

Brainstem Lewy body
Cortical Lewy body
Etiology

• No known cause
• Probable combination of factors:
  • Genes
  • Environmental toxins
  • An interaction between the two.
• Sporadic
• Current Thinking:
  • 10% genetic and 90% sporadic
The Diagnosis

Clinical diagnosis

• Based on history and exam
• Currently no lab tests.
• Biomarkers may be in the future
• Imaging done to rule out other diseases

DaTScan which measures presynaptic dopamine transporters in the nerve terminals

NORMAL

PARKINSON'S DISEASE
Differential Diagnosis

• Idiopathic Parkinson’s disease  85%

• Secondary Parkinsonism  12%

• Atypical Parkinsonism  3%  
  (Parkinson Plus)
Parkinsonian “+” Syndromes

• Multiple System Atrophy (MSA)
  • Autonomic Dysfunction, Cerebellar
• Progressive Supranuclear Palsy (PSP)
  • Severe imbalance, Difficulties w/ speech/swallow, vertical gaze
• Corticobasal Degeneration (CBD/CBGD)
  • asymmetrical, alien limb, apraxia, speech and sensory abnormalities
• Dementia with Lewy Body (DLB/LBD)
  • Early dementia, hallucinations
Idiopathic Parkinson’s Disease

• Resting Tremor
• Rigidity
  • Changes in posture, ROM, torso rotation
• Bradykinesia/Slowness
  • Short steps, decreased arm wing, decreased fine movement.
More Than A Motor Disease

• Affect every system in the body
• An average of 10-12 non-motor symptoms
• Have a greater impact on quality of life than motor symptoms
• Typically do not respond well to PD medications.
Non-Motor Symptoms

**Neuropsychiatric**
- Depression
- Anxiety
- Apathy
- Panic Attacks
- Compulsive Behaviors
- Cognitive decline
- Psychosis/Hallucinations

**Autonomic**
- Low BP on position change
- Urinary urgency and frequency
- Excessive sweating
- Oily Skin (seborrhea)
- Sexual Dysfunction
Non-Motor (cont.)

Gastrointestinal Problems

- Constipation
- Weight loss
- Excessive Saliva
- Difficulty swallowing
Non-Motor (cont.)

Sleep Disorders
• Excessive Daytime Sleepiness
• REM Sleep Behavior Disorder (RBD)
• Sleep fragmentation
• Insomnia
• Fatigue
• Nightmares
• Sleep Apnea

Sensory/Other
• Pain
• Visual Changes
• Loss of Smell
Progression of Parkinson’s Disease

- Honeymoon Period: 3 years
- Motor Complication Period: 8 years
- Resistant Symptoms: 15 years
- Cognitive Decline: 20 years

Years

Onset

Death
Hoehn and Yahr Staging based on Motor Symptoms

Early, Middle and Late Stages

Stage 1. Unilateral Involvement

Stage 2. Bilateral involvement

Stage 2.5 Mild bilateral disease with recovery on pull test.

Stage 3. Mild/moderate disease with impaired balance.

Stage 4. Severe disease; marked disability

Stage 5. Confinement to bed or WC
United Parkinson Disease Rating Scale (UPDRS)

- Part I  Non-motor aspect of experiences of daily life.
- Part II  Motor Aspect of Experiences of Daily Life.
- Part III  Motor Exam
- Part IV  Motor Complications of Therapy
The Multidimensional Caregiver Strain Index (MCSI)

• 18 Questions

• Six Types of Strain
  - Physical Strain
  - Social Constraints
  - Financial Strain
  - Time Constraints
  - Interpersonal Strain
  - CR demanding/manipulative

• Scoring Range 0-60

(Stull, D. Journal of Clinical Geropsychology, 1996)
Management of Parkinson’s disease

• Information / Hope / Communication

• Management of motor symptoms

• Assessment and management of non-motor symptoms
Help patients utilize the knowledge and power of neuroplasticity

• Neuroplasticity: The ability of the brain to change and adapt.

• Patient Message: You can make a difference in the course of your disease by what you choose to do (self-efficacy).
Management of Motor Symptoms

- Neuroprotection
  - Exercise
  - Socialization

- Symptomatic Therapy
  - Pharmacological
  - Surgical

- Team Care: Rehabilitation therapies
Symptomatic drug therapy in PD

• **Levodopa**
  - Carbidopa/Levodopa 25/100 (ODT avail)
  - Carbidopa/Levodopa 25/250
  - Carbidopa/Levodopa CR 25/100
  - Carbidopa/Levodopa CR 50/200
  - Carbidopa/Levodopa ER (Rytary)
  - Duopa (intestinal gel)

• **Dopamine agonists:**
  - Mirapex .5- 1.5 mg
  - Requip 3-8 mg tid
  - Rotigotine (Neupro patch)
  - Apokyn (apomorphine) injectable (rescue)
Motor Fluctuations in PD
Symptomatic drug therapy in PD

**MAO-B Inhibitors**
- Rasagaline
- Selegeline
- Safinamide

**Anticholinergics:**
- Artane / trihexiphenidyl
- Parsitan (Canada)

**Amantadine**

**COMT Inhibitors:**
- Comtan / entacapone
- Tasmar / tolcapone
- Stalevo (combo of levodopa and comtan)
Environmental considerations for motor fluctuations

- **Diet**
  - Levodopa should be taken on an empty stomach
  - Levodopa not taken with protein

- **Medication Compliance**
- **Anxiety/stress**
- **Infection**
- **Exercise**
  - Can increase or decrease gastric emptying
Managing Side Effects of Drugs with Drugs

• Dyskinesia: Amantadine
• Nausea: Ondansatron Selective 5-HT₃ Receptor Antagonist
• Hallucinations: Quetiapine (Seroquel), Clozaril (clozapine), pimavanserin (Nuplazid)
• Need honest and open conversation about goals of care
• Work with social worker to identify goals, witness conversation
Surgical Therapy: Deep Brain Stimulation (DBS)

What can DBS do for PD?

- Improves symptoms that respond to levodopa (tremor, rigidity, and bradykinesia).
- It can reduce motor fluctuations.
- It does not help swallowing, speech and balance.
- It can help dyskinesia.
- It may make cognition and balance worse.
- Caregiver support is essential.
Depression and Anxiety

• Common Problem
  • Depression - 40-60% of people
  • Motor and cognitive symptoms can be confused with depression
  • Symptoms don’t fit DSM-IV criteria
  • Anxiety (panic attacks)– 30-40%

• Biggest Impact on QOL
Is it Parkinson’s disease or depression?

**Parkinson’s Disease**
- Facial masking
- Psychological and motor slowing
- Sleep fragmentation
- Fatigue
- Decreased interest in activities
- Decreased Attention and thinking
- Loss of appetite

**Depression**
- Facial masking
- Psychological and motor slowing
- Sleep disturbance
- Fatigue
- Decreased interest in activities
- Decreased Attention and thinking
- Loss of appetite
Sexual Dysfunction

- Sexual function (frequency, arousal, satisfaction) decreased for both women and men.
- Orgasm dysfunction, fearfulness, isolation
- Communication, tenderness, attention, shared daily activities important
- Dopamine agonist drugs affect impulse control, which can include compulsive sexual behavior
- Talk about this!
Cognitive Changes in PD

- Increases with disease severity
- Most people with PD will have some cognitive changes.
- Types of dysfunction
  - Attention
  - Working Memory
  - Speed of processing
  - Executive function
  - Visuospatial
Treatment of Dementia

• Acetyl cholinesterase inhibitors
  - Donepezil, rivastigmine

• Reduction in PD drugs

• Cognitive Stimulation

• Cognitive Retraining

• Energy Conservation

• Family support and caregiver respite
What's the difference between ALZHEIMER'S and DEMENTIA?

Dementia is an umbrella term that describes a wide range of symptoms including memory loss and mental decline. Alzheimer's is the most common form of dementia, but there are many others.

Learn more at alz.org/relateddementias
Events

July 15, 2017 - 9:00am
State Center, IA
2nd Annual Let's Beat Lewy Golf Tournament

August 25, 2017 - 6:00pm
Fort Lauderdale, FL
Cruise For A Cure

Find Support
Patients and Caregiver Services
Pain

- Prevalence: 30% of patients
- Types
  - Musculoskeletal
  - Neuropathic
  - Dystonic
  - Central
  - Akathisia
Management of Pain

• Recognition as a symptom of PD and ability to differentiate from other comorbidities
• Directed Physical & Occupational Therapy
• NSAIDs
• Botox for dystonia
Sleep Fragmentation & Fatigue

Etiology: Multifactorial

- Poor sleep hygiene
- Depression
- Nocturia
- Pain
- Rigidity
- REM sleep behavior disorder
- Medications
- Sleep Apnea
Management of sleep problems

- Review drugs
- Treat depression
- Treat night time rigidity
- Dopamine agonists for RLS
- Reduce nocturia
- Schedule naps
- Teach sleep hygiene
- Energy conservation techniques
Core Assets of Quality Team Care

• Understand the complexities of the disease.
• Utilize the unique contributions of each discipline in the health care team.
• Put the patient and family in the center of care.
• Good communication to patient, family and other team members.
• Know your resources.
Thank you!