Parkinson’s Disease
Update on Diagnosis and Management

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Parkinson's Disease

- Second most common neurodegenerative disorder after Alzheimer’s Disease
- Disorder of Aging
- Diagnosis depends on clinical history and observation
  - Accuracy improves with observation over time
- Currently confirmatory lab or diagnostic study
Parkinson’s Disease Diagnosis
Step 1: Motor Features

Primary- Bradykinesia

Movements: delay initiation, reduced speed and amplitude

At least one of:

Rigidity: “lead pipe”, cogwheel may present as pain e.g.: frozen shoulder

Rest Tremor

Gait impairment/postural instability
Exclusion for Parkinson’s disease

- History of repeated strokes with stepwise progression
- History of repeated head injury
- Oculogyric crises
- History of definite encephalitis
- Neuroleptic medication at onset
- Sustained remission
- Strictly unilateral features after 3 years
- More than 1 affected relative
- Supranuclear gaze palsy
Exclusion for Parkinson’s disease, cont.

- Cerebellar signs
- Severe early autonomic involvement
- Early severe dementia with disturbances of memory, language and praxis
- Babinski’s sign
- Cerebral imaging with communicating hydrocephalus or tumor
- Absence of response to large doses of levodopa without malabsorption
- MPTP exposure
3 or more:
- Unilateral onset
- Excellent response to levodopa
- Rest tremor
- Development of levodopa-induced dyskinesia
- Progressive
- Persistent asymmetry, most affecting the side of onset
- Levodopa response for at least 5 years
- Clinical course of 10 years or more
Parkinson’s Disease
Non Motor Symptoms

- Depression
  - May precede motor signs by years
  - Common throughout illness
- Cognitive Impairment
  - Frontal executive and visual spatial
- Olfactory Loss
- Autonomic Dysfunction
  - Constipation
  - Orthostatic hypotension
- Fatigue
Parkinson’s Disease
Non Motor Symptoms

- **Sleep Disturbances in Parkinson’s Disease**
  - Obstructive Sleep Apnea
    - Up to 50% of PD
  - Periodic Limb Movements of Sleep
  - Restless Limb Syndrome
    - Up to 50% of PD
  - REM Behavioral Disorder
    - 25-50% of PD
Parkinson’s Disease
Differential Diagnosis

- Other Degenerative Parkinsonian Syndromes
  - Lewy Body Dementia
  - Progressive Supranuclear Palsy
  - Multisystem Atrophy
  - Corticobasal Degeneration
  - Dystonia
  - Frontotemporal Dementia Syndromes
Parkinson’s Disease
Differential Diagnosis

- Drug-Induced parkinsonism
  - Neuroleptics
  - Amiodarone
  - MPTP
- Vascular parkinsonism
- Hydrocephalus
- Fragile X Disorders
- Wilson’s Disease
- Prion Diseases
Parkinson’s Disease Management

- Education
- Lifestyle Changes
- Physical, Occupational and Speech Therapy
Parkinson’s Disease Management- Non Motor Symptoms

- Depression
- Sleep Disorders
  - Obstructive Sleep Apnea; REM Behavioral Disorder
- Cognitive dysfunction
- Autonomic dysfunction
  - Orthostatic hypotension
  - Constipation
Parkinson’s Disease Management - Pharmacological

- **Levodopa**
  - Carbidopa/levodopa - 25/100 tid up to 1200 5-6 times daily
    - Long acting formulations; Duodenal administration
  - Adverse effects:
    - Early: Nausea/vomiting; orthostasis
    - Later: Dyskinesia; fluctuations; hallucinations
  - Carbidopa/levodopa/entacapone - 25/100/200 tid
  - Cataehol-O-Methyltransferase inhibitors (COMT)
    - Entacapone - 200 mg with each dose levodopa
    - Tolcapone - 100 tid to 200 tid
  - Adverse effects:
    - Both: Diarrhea, discolored urine. Tolcapone: fulminant hepatotoxicity
Parkinson’s Disease
Management- Pharmacological

- **Dopamine Agonists**
  - Pramipexole: 0.125 mg tid - 1.5 tid (XR: 0.375-4.5 daily)
  - Ropinirole: 0.25 mg tid - 8 mg tid (XR: 2- 24 mg daily)
  - Rotigotine: 2 mg/24hr - 8 mg/24 hr patch

- **Adverse Effects:**
  - Sudden onset sleep, impulse control disorders, leg edema, hallucinations, orthostasis
  - Exacerbation of levodopa effects: dyskinesia, nausea/vomiting
  - Cost: XR formulations and patch
Parkinson’s Disease Management- Pharmacological

- **Monoamine Oxidase-B Inhibitors**
  - Selegiline- 5 mg daily to bid
  - Rasagiline- 1 mg daily

  *Adverse Effects: Nausea, dyskinesia, orthostasis*  
  *medication interactions*

- **Other**
  - Amantadine: 100 mg daily to tid
    - Motor fluctuations

  *Adverse Effects: livido reticularis, leg edema, cognitive impairment, hallucinations*
Parkinson's Disease Management - Surgical

- Deep Brain Stimulation
  - Improves: tremor, bradykinesia, dyskinesia, medication-related fluctuations
    - Allows reduction of dopaminergic meds
  - Little benefit: postural instability, freezing, non-motor symptoms
  - Outcomes correlate with experience and volume

- Stereotactic Radiosurgery
  - Uncertain effectiveness
Parkinson’s Disease
Management- Complications Long Term

- Motor Fluctuations, Wearing Off, Dyskinesia
  - Addition of longer acting agents, decreasing dosing intervals
  - DBS
- Hallucinations
  - Look for non Parkinson meds and other causes
  - Reduction of meds: those with anticholinergic effects first, less potent next and lastly levodopa
  - Atypical neuroleptics- clozapine, quetiapine
- Orthostasis
  - Salt, head of bed elevation, midodrine, fludrocortisone
- Cognitive Decline
  - Medications, sleep disorders, depression
  - Central cholinesterase inhibitors
Parkinson’s Disease Management - Long Term

Recurrent involvement of Physical, Speech and Occupational Therapy

Movement Disorder Center consultation before complications and progressions with periodic re-evaluation
Parkinson’s Disease Bibliography