Parkinson’s Disease

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DISEASE/SKILL OVERVIEW

- Chronic, progressive, disabling motor and nonmotor symptoms.
- Second most prevalent neurodegenerative condition
- Affect millions worldwide, will double by 2030
- Mostly men; white; median age >65
- Cause is multiple factors of deterioration of dopamine neurons; 10% genetic etiology; environmental and toxic exposure
- Caffeine and smoking protective
- Symptoms: Motor- tremor, bradykinesia, rigidity, imbalance; Nonmotor- sleep and mood disorders
- Four cardinal motor symptoms: TRAP: tremor, rigidity, akinesia (bradykinesias), postural instability
- Dyskinesias can occur with levodopa use

NEURO EXAM PEARLS

- Premotor when used in this context describes the period of prodrome before motor symptoms are evident
- Assess first cranial nerve for anosmia (a premotor symptom)
- Assess constipation, poor REM sleep and depression as premotor symptoms.
- Look for: Secondary motor symptoms: diminished arm swing, decreased blink rate, facial expressions (hypomimia), decreased voice volume (hypophonia), difficulty turning in bed

- Tremor is resting, rhythmic oscillation and 1st motor symptom in 90%; initially, asymmetric
- Watch for atypical Parkinsonisms: early speech difficulties, imbalance, lack of tremor, symmetry of symptoms, poor response to levodopa
- Assess: falls, swallow, comorbid conditions, hospitalization, changes in living arrangements
- Assess: nonmotor constipation, pain, mood
- Postural instability occurs 10 years from dx., correlates with dz. severity and levodopa resistance
- Also watch for orthostatic hypotension in progressive disease

MANAGEMENT STRATEGIES/ NURSING IMPLICATIONS

- Aim: optimize “on time” and reduce “off time” while minimize levodopa induced dyskinesias
- During the hospital admission medication reconciliation, adhere to patient’s home dose times rather than conventional hospital does times
- Medications indicated when symptoms become bothersome (cause suffering or interfere with QOL)
- Levodopa remains the gold standard
- Early use of levodopa leads to better long-term motor outcomes
- Immediate release may offer best benefit over controlled or extended release options.
- Several mechanisms of delivery exist that bypass the stomach and enhance drug absorption
• Dopamine agonists (DA) worsen daytime sleepiness and psychiatric symptoms
• Avoid DA in newly diagnosed; use lowest effective doses; avoid starting DA in elderly
• Advocate for lowest effective dose (gives benefit, minimizes dyskinesias, other adverse events)
• Levodopa provides greatest effect on motor symptoms up to 5 yrs.
• No difference in efficacy between DA medications, choice by patient preference, mode of administration and cost
• Motor fluctuation and “off time” – advocate for more frequent levodopa dosing; use of ER forms, catechol-O-methyltransferase (COMT) inhibitor or MAO-BI or DA.
• Dyskinesias may be managed with amantadine; caution in elderly (SE: hallucinations)
• Consider intestinal gel levodopa and surgery
• Management is all about timing. Seek a true understanding of “off/on.” Have patient keep a diary. Ask: How long until meds take effect?; How long does effect last?; When do dyskinesias occur?; When does “wear off” occur?; Any dystonia in early am?; Any time meds do not work such as meal time?
• For predictable wearing off: advocate for medication increase, give more frequently, or use other formulations
• For am dystonia: use levodopa CR at HS
• If less med effect occurs after protein meal – space protein intake throughout day
• Dyskinesias: use NMDA antagonist

**Non-pharmacological nursing management**
- Educate patient and family on disease and treatment plan (medication, side effects)
- Encourage participation in support groups
- Refer to physical and occupational therapy (Fall prevention, gait aids, balance, adaptive equipment)

**MEDICATION/SPECIALIZED LABS**
Medication information does not constitute treatment advice. Consult with expert provider’s opinion and FDA guidelines.

- Gold standard: levodopa administered with dopa decarboxylase inhibitor (carbidopa) to reduce breakdown and lessen nausea. (tx. Motor fluctuations)
- Formulation: IR, ER and oral disintegrating tabs and IPX-o66 (ER rapid absorption); enteral and inhalation
- **Initial preferred treatment:** Levodopa for motor symptoms in early disease (H&Y stage 1,2)- more beneficial than dopamine agonists
- Benefit seen with levodopa at 300mg/d
- Lower risk of dyskinesias with doses <400mg/d
- COMT inhibitor (adjunct tx.): entacapone; tolcapone
- Levodopa + COMTI

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All Neuroscience Nursing Primer references listed on special reference page.
• Dopamine agonist (tx PD sx.): pramipexole IR & ER; ropinirole IR & ER; rotigotine; apomorphine HCL.

• MAO-B Inhibitors (add on tx to levodopa): selegiline & oral disintegrating; rasagiline; safinamide.

• NMDA antagonist (tx PD and dyskinesias): amantadine IR & ER cap and tab.

• Anticholinergic (tx tremor): trihexyphenidyl; benztropine

TEAM QUESTIONS/COMMUNICATION

• Aim of Tx to optimize on time and reduce off time while minimizing dyskinesias

• Tremor less responsive to meds than other symptoms.

• Nonmotor symptoms: neuropsychiatric (depression, anxiety, psychosis, impulse control); cognitive; autonomic (orthostatic hypotension, constipation); sleep disorders (vivid dreams, insomnia); sensory abnormalities (paresthesias, ageusia, anosmia)

• Assess for UTI

• Refer for surgical treatment, such as stimulator implantment, as indicated

• Advanced Parkinson’s Disease: reduced med benefit; wearing off syndrome; uneven absorption due to gastric emptying issues

• Refer palliative care as necessary

PATIENT/FAMILY/CAREGIVER TEACHING SUPPORT

• Counsel adverse effects of dopamine agonist (impulse control disorders; somnolence, cognitive decline, hallucinations)

• Educate re: nonmotor symptoms and encourage reporting for management

• Dispel myths of levodopa phobia or fear of dyskinesias

• Teach fall avoidance

• Encourage visit to PCP and mental health providers

• Changes in protein intake or GI illness may impact levodopa absorption

• With decline in function prepare family for behavioral changes (dementia, psychosis, wandering; maintaining nutrition, skin integrity, hydration; bowel maintenance (constipation, diarrhea); incontinence management; aspiration precautions

TOOLS/SUPPLIES

• Hoehn and Yahr staging

• Alternative medication delivery systems

• Exercise

• Deep Brain Stimulation

All Neuroscience Nursing Primer references listed on special reference page.