Autonomic Dysfunction in Parkinson's Disease

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Disclosures

- Site PI for Neurocrine study in Huntington's Disease
- Most of the medications discussed are off-label

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- Involve non-dopaminergic systems
  - Acetylcholine, serotonin, and norepinephrine
  - Olfactory, cerebral cortex, spinal cord, peripheral autonomic nervous system
- Frequently unrecognized and untreated
- Major determinant in quality of life
- May develop at any stage, even before any motor symptoms

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Neuropsychologic features
- Dementia
- Psychosis
- Depression
- Anxiety Syndromes
- Dopamine Dysregulation Syndrome
- Impulse Control Disorders

Sleep disorders
- Insomnia
- Restless Leg Syndrome (RLS)
- REM sleep behavior disorder (RBD)
- Excessive daytime sleepiness

Autonomic dysfunction
- **Drooling**
- **Constipation**
- **Bladder Dysfunction**
- **Orthostatic Hypotension**
- **Sexual Dysfunction**

Sensory
- Anosmia
- Pain
- Parasthesias

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Autonomic Dysfunction

- Gastrointestinal dysfunction
  - Dysphagia
  - Drooling
  - Delayed gastric emptying
  - Constipation
- Bladder Dysfunction
  - Overactive bladder
  - Underactive bladder
- Cardiovascular dysfunction
  - Orthostatic Hypotension
  - Supine hypertension
  - Postprandial hypotension
- Sexual Dysfunction
  - Erectile dysfunction
  - Decreased libido
- Thermoregulatory dysfunction
  - Heat/cold intolerance
  - Hyper/hypohydrosis

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Gastrointestinal Dysfunction

- Drooling
- Dysphagia
- Delayed gastric emptying
- Constipation

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Drooling

- Occurs in 70-78% of people with PD
- Not actually sialorrhea. Due to decreased frequency and efficiency of swallowing
- Management/Treatment
  - Chewing gum/hard candy
  - Anticholinergic
    - Atropine
    - Glycopyrrolate
  - Botulinum toxin injections into salivary glands

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Dysphagia

- Dysfunction at the oral, pharyngeal, or esophageal level of swallowing
- Risk of aspiration, pneumonia
- Increases risk of malnutrition
- Management
  - Levodopa?
  - Speech therapy
    - Safe swallowing techniques
    - LSVT-LOUD

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Delayed gastric emptying

- Any stage of disease
- Symptoms include nausea, vomiting, early satiety, postprandial fullness, and upper abdominal pain
- May impair effectiveness of levodopa
- Management options are limited

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Constipation

Most common GI complaint

- 50-60% of patients
- May be an early sign of disease

Contributing factors

- Slowed stool transit time
- Outlet obstruction
- Lack of exercise

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Management of Constipation

Management

- Increase fiber and fluid intake
- Exercise
- Stool softeners
- Osmotic laxative (as needed or daily)
  - Polyethylene glycol – shown effectiveness in PD
  - Lactulose, sorbitol
- Stimulant laxatives and enemas only sparingly
- Prokinetic agents

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Bladder Dysfunction

Present in >50% of patients

Detrusor overactivity

- Nocturia
  - Earliest and most common
- Urgency
- Frequency
- Incontinence

Detrusor hypoactivity/bradykinesia of urethral sphincter

- Difficulty voiding
- Hesitancy and abnormal stream
- Incomplete emptying

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Management of Bladder Dysfunction

Management

- If acute change, rule out UTI
- Decrease evening fluid intake
- Urologic assessment
- Detrusor overactivity
  - Anticholinergics
    - Can cause constipation, dry mouth, or cognitive problems
  - Botulinum toxin injections
- Obstructive symptoms
  - Alpha adrenergic blockers
    - May worsen orthostatic hypotension

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Cardiovascular Dysfunction

- Orthostatic hypotension
- Supine hypertension
- Postprandial hypotension

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Orthostatic Hypotension

Drop of systolic blood pressure of 20+mmHG or diastolic blood pressure of 10+mmHg within 3 minutes of standing

May be caused by the disease, antiparkinsonian medications, or both

Management
- Increase fluid and salt intake
- Elevate head during sleep
- Compression stockings
- Abdominal binders
- Medications
  - Droxydopa
  - Midodrine
  - Fludrocortisone
  - Decrease DRT

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Supine Hypertension

- About half of people with OH have an increase in their blood pressure when lying supine
- Balance the treatment of OH and supine hypertension
- Management
  - Elevate head of bed 4-6 inches
  - Short-acting antihypertensives

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Postprandial Hypotension

- More common in elderly
- More likely after large carbohydrate-heavy meals
- May develop within 15 minutes, last up to 3 hours

- Management
  - Reduce carbohydrates
  - Eat smaller, more frequent meals

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Sexual Dysfunction

- Erectile dysfunction
- Decreased libido

- Management
  - Sex therapy
  - Phosphodiesterase inhibitors for ED

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- Heat/cold intolerance
- Hyperhydrosis/hypohydrosis

- Management
  - Avoid temperature extremes
  - Botulinum toxin injections for axillary hyperhydrosis

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Autonomic dysfunction is common in PD and often begin before the onset of motor symptoms

Management of autonomic symptoms is important in optimizing quality of life in patients with PD

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