Autonomic Disorders in Parkinson’s Disease

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What is the Autonomic Nervous System?

- Autonomic = automatic
- Vital functions managed without our thinking about it
- Divided into parasympathetic and sympathetic activity
- Managed in lower brain, not cortex
Autonomic Functions

- Tearing, salivation
- Gastric emptying
- Heart rate, blood pressure control
- Bowel movements
- Breathing control
- Urination
- Sweating
- Sexual function
Neuropathology of autonomic dysfunction in synucleinopathies
Autonomic Nervous System in Parkinson’s disease

- Autonomic problems occur in >50% of patients with Parkinson’s disease and correlate with disease severity, length of disease and age
- When autonomic changes are severe and occur at disease onset it likely indicates a different disease = Multiple System Atrophy
Autonomic Nervous System in Parkinson’s Disease

- Excessive salivation
- Oily skin = seborrhea
- Excessive sweating
- Orthostatic hypotension
- Slow stomach emptying
- Constipation
- Urinary dysfunction
- Sexual dysfunction
Constipation

- Definition of Constipation (Rome IV criteria)
  - Straining – 25% of time
  - Hard, lumpy stools – 25% of time
  - Feeling of incomplete emptying – 25% of time
  - Feelings of obstruction – 25% of time
  - Need manual disimpaction – 25% of time
  - Fewer than 3 spontaneous BM per week
  - No loose stools unless using a laxative
Colonic Peristalsis

Animated Biomedical
https://www.youtube.com/watch?v=Ujr0UAbyPS4
Constipation

- At least 50% of patients with PD
- May be a risk factor for PD preceding disease by years
- Prolonged colonic transit in 80%
Constipation Treatment

• If haven’t had bowel movement in 10 days
  – See your doctor
  – Will do X-ray to rule out obstruction
  – May need disimpaction or clean out
    • Go-lightly
    • Can be uncomfortable - cramping
Constipation Treatment

- Once reset start a bowel maintenance program
  - Step one:
    - Fluids: 64 ounces of fluid daily (4 large soda bottles)
    - Exercise: Follow Dr. King’s advice
  - Step two:
    - Fiber: “The great equalizer”, start slow ½ tbsp daily up to 2 tbsp
    - 3 ounces of yogurt/probiotic: Don’t overdo
  - Step three:
    - PG-3355 =Miralax: Start one capful daily can take up to 4 caps
  - lubiprostone (Amitiza), warm prune juice, glycerol supps
Urinary Problems

• Occurs in up to 65% of Parkinson’s patients
• Urgency 46%
• Incomplete emptying 42%
• Incontinence in 25%
• More complex in women than men because of the effects of childbirth
Urinary Problems

https://www.youtube.com/watch?v=US0vNoxsW-k&t=29s
Treatment of Urinary Problems

- Hold fluids for 3 hours before bedtime
- Avoid caffeine, chocolate, alcohol
- Treat leg edema
- Avoid constipation
- Sleep with head of bed elevated
- Scheduled voiding
- Kegel’s exercises
- Pads, diapers etc.
Medications for Urinary Problems

• Block the parasympathetic nerves to bladder
  Oxybutynin (Ditropan XL, Oxytrol), Tolterodine (Detrol), Darifenacin (Enablex), Solifenacin (Vesicare), Trospium (Sanctura), Fesoterodine (Toviaz)
  - Can cause confusion, memory loss, constipation and dry mouth

• Block the sympathetic stimulation of bladder
  - Tamsulosin (Flomax) and silodosin (Rapaflo)
  - Mirabegron (Myrbetrix)
Orthostatic Hypotension

- Drop of 20 mmHg drop in systolic BP on standing
- 20 % of PD patients
- Causes dizziness, weakness, fainting, falls, blurry vision
Cause of OT in Parkinson’s

- 700 ml of blood pools in the legs and abdomen when we stand
- Baroreceptor reflex acts in seconds to increase BP
- Levodopa, other drugs, Parkinson’s nerve loss blunts the reflex
Treatment of OT

- Fluids: At least 70 ounces = 4.5 large pop bottles per day
- Salt: At least 4 grams per day
- Manage BP meds
- Sleep with head of bed up
- Stockings and/or abdominal binder
- Medications
  - Fludra-cortisone (Florinef)
  - Midodrine (Proamatine)
  - Pyridostigmine (Mestinon)
  - Droxidopa (Northera)
Physical supports for OT
Elevating the Head of Bed

• Normalizes high blood pressure at night
• Improves kidney function
• Improves fluid balance
• May need footboard
Excessive Drooling
Sialorrhea in Parkinson’s Disease

- Salivary glands
  - Parotid
  - Submaxillary
  - Sublingual
- Parotid responsible for >50% of salivary flow
Botulinum toxin for Sialorrhea

• Meds to stop drooling have side-effects (Imipramine, Amitryptiline, Scopalamine)
• Medicare approves payment for botulinum toxin for drooling as an initial therapy
• Injected under ultrasound guidance
• Lasts 3-4 months
• Will make saliva thick

Courtesy of University of Iowa Healthcare
Research=Hope

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