Non-Motor Symptoms of Parkinson’s Disease

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Objectives

What will you get out of the presentation?

1. Review non-motor symptoms affecting people with Parkinson’s disease
2. Understand the beginning of these symptoms
3. Managing these symptoms using simple strategies
4. Take home 5 key messages
When Do Non-Motor Symptoms Start?

- Parkinson’s is the 2nd most common neurodegenerative disease after Alzheimer disease
  - Prevalence 1-2% in 65+ year old population
- Early stages → more motor features
- Later stages → more non-motor features
  - Non-motor symptoms can have a great impact on quality of life
Symptoms of Parkinson’s

Cardinal Motor Symptoms
- Rest Tremor
- Rigidity
- Bradykinesia
- Postural Instability

Important Non-motor Symptoms
- Autonomic Disturbance
- Cognitive Impairment
- Sleep Disturbance
- Neuropsychiatric disturbance

2 or more symptoms
Helpful Clinical Findings for Diagnosis

- Poker face
- Voice changes
- Slowness to movement (bradykinesia)
- Trouble rising from chair
- Difficulty turning in bed
- Trouble buttoning shirt
- Stooped posture with loss of arm swing
- Drooling
- Change in handwriting (micrographia)
Dopaminergic Pathways - “Motor”

Substantia Nigra

Putamen

Caudate Nucleus

Nigrostriatal Pathway
“Non-motor” Pathways

- Noradrenergic
- Serotonergic
- Cholinergic
<table>
<thead>
<tr>
<th>Neuronal cell loss</th>
<th>Diagnosis</th>
<th>Neuronal cell loss continues</th>
<th>15+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtle, non-motor symptoms</td>
<td>First clinical symptoms, 70% neurons lost</td>
<td>Symptoms progress</td>
<td>Severe presynaptic cell loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wearing off</td>
<td>Decreasing response to Ldopa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Random fluctuations</td>
<td></td>
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</tbody>
</table>
Non-Motor Symptoms (NMS)

- Autonomic
  - Constipation
  - Urinary frequency
  - Sexual dysfunction
  - Low blood pressure
  - Sweating

- Sleep
  - Insomnia
  - Fractured sleep
  - REM Behavior Disorder
  - Sleep disordered breathing (apnea)
Non-Motor Symptoms (NMS)

- Other
  - Pain
  - Visual disturbances
  - Fatigue
Parkinson’s Progression Braak Staging

- Stage 4: Cortex
- Stage 3: Substantia nigra
- Stage 2: Locus ceruleus
- Stage 1:
  - Olfactory bulb
  - Dorsal motor n

Braak et al, 2003 Neurobiol.Aging
Parkinson’s Progression Braak Staging

- Stage 4: Cortex
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‘Premotor’ Symptoms of Parkinson’s

Before tremor and slowness begins

- Loss of smell (hyposmia)
- REM sleep behaviour disorder
- Excessive daytime sleepiness
- Mood disorders
- Erectile dysfunction
- Constipation
Substantia nigra dopaminergic neuron loss in PD cases

Premotor symptoms

Motor symptoms in cases

Premotor symptoms in noncases

Diagnosis

Symptoms and Signs Prevalence

Age

The Victory Summit® – Vancouver, BC | April 30, 2016
**Incidence of Nonmotor Symptoms (NMS)**

<table>
<thead>
<tr>
<th></th>
<th>Incidence</th>
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<tbody>
<tr>
<td>Olfactory Dysfunction</td>
<td>90%</td>
</tr>
<tr>
<td>Dementia</td>
<td>78%</td>
</tr>
<tr>
<td>Depression</td>
<td>40-50%</td>
</tr>
<tr>
<td>Autonomic Dysfunction</td>
<td>80%</td>
</tr>
<tr>
<td>Orthostatic Hypotension</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Incidence of Nonmotor Symptoms (NMS)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal Symptoms</td>
<td>50-95%</td>
</tr>
<tr>
<td>Urogenital Dysfunction</td>
<td>57-83%</td>
</tr>
<tr>
<td>Pain</td>
<td>40-50%</td>
</tr>
<tr>
<td>Sleep Disorders</td>
<td>66%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>50%</td>
</tr>
</tbody>
</table>

Autonomic Dysfunction
Constipation

- Bowel movements $\leq 3x$ / week
- Pain or straining during bowel movements
- Degeneration of nerve cells in gut may be first target

- Increased transit time
  - Leads to abdominal bloating, discomfort
  - Could lead to obstruction in severe cases
Constipation

Treatment - not unique to Parkinson’s

- Increasing water intake
- Exercise
- Stick to a routine
- Add fiber to diet (fruit and bran buds)
- Stool softeners
**Constipation**

Treatment - not unique to Parkinson’s

- **Stool softeners**
  - Osmotics – Polyethylene glycol, Lactulose
  - Stimulants are often required
    - **Mild** → Senokot, Senna Tea
    - **Moderate to severe** → Bisacodyl oral or Glycerine suppository
Urinary Frequency: Bladder Muscle Overactivity

- Nighttime frequency is common
  - Mobility issues aggravate the problem
- Daytime urinary frequency / incontinence
Urinary Frequency: Bladder Muscle Overactivity

Management:

• Diapers, condom catheters
• Medications can cause side effects
  – Confusion, light headedness, constipation*
  – New medication on market is free of these side effects *(mirabegron)*

*like oxybutinin, solifenacin, tolterodine
Sexual dysfunction

- Decreased libido
- Erectile dysfunction
- Hyper sexuality
  - Likely related to dopamine agonist: impulse control disorder
Sexual dysfunction

- Management
  - Lifestyle modifications
  - Medications
    - Sildafenil (Viagra)
    - Tadalafil (Cialis)
    - Vardenafil (Levitra)
Low Blood Pressure

Caused by Parkinson’s directly, or by medications

- Dizziness
- Headache
- Neck ache
- “Morning fogginess”
Low Blood Pressure

Management

• BP home monitoring device
• Compression stockings (low compliance)
• Reduce / eliminate anti-hypertensive medications
  – Medication as suggested by your doctor
• Avoid big meals
  – Increase salt intake
  – 6-8 glasses of water / day
Skin Issues and Sweating

- Oily skin (excessive sebum)
  - Gentle soap or mild skin cleanser
  - Avoid alcohol based products

- Red, itchy, scaly forehead (seborrhoeic dermatitis)
  - Consult with dermatologist
  - Steroid-based cream or ointment (short-term solution)
Skin Issues and Sweating

Excessive sweating despite normal room temperature

- If a wearing off phenomenon ➔ adjust PD meds
- Minimize food or drinks that trigger sweating
  - Alcohol, caffeine, spicy foods
- Wear loose-fitting and non-synthetic clothes (not nylon)
- Minimize situations that trigger sweating
  - Crowded rooms, stressful situations
Sleep and Sleepiness
Sleep and Parkinson’s’s

- Most common non-motor complaint
- Some sleep disturbances nearly universal
  - Insomnia
  - Fragmented sleep
  - Sleep apnea (up to 40% of population)
  - REM sleep behavior disorder (RBD)
  - Excessive Daytime Somnolence
Sleep and Parkinson’s

Management

- Explore options with doctor
  - Cognitive behavior therapy (CBT)
  - Medication changes
    - Verify if wearing off at night
- Exercise
  - During the day
  - Not within 2 hours of bedtime
Sleep and Parkinson’s

Management

- Good sleep hygiene
  - Create a bedtime routine
  - Use bedroom/bed for sleep activities only
  - Avoid stimulants 1 hour before bed time (caffeine, alcohol)
  - Low lighting in bedroom
  - Decrease electronic usage (blue light)
Excessive Daytime Sleepiness

• Common in Parkinson’s - about 40%
• Cause is multifactorial
  – Mostly a primary disease manifestation
  – Poor nighttime sleep
  – Medications (all, but esp. dopamine agonists)
  – Sleep apnea
• Sleep attacks (rare, < 2%)
• Warning: Never drive drowsy!
REM Sleep Behavior Disorder (RBD)

- Up to 50% of Parkinson’s population experiences
- Acting out dreams during sleep
  - Dramatic, violent, potentially injurious behavior
  - Talking, yelling, swearing, grabbing, punching, kicking, jumping, or running out of the bed
- Most likely have no recollection
REM Sleep Behavior Disorder (RBD)

- **Management**
  - **Medication**
    - Melatonin 5-10 mg at bedtime
    - Clonazepam 0.5-2mg at bedtime
Sleep Disordered Breathing

- Sleep apnea or hypopnia
  - Induces a state of oxygen deprivation at night
- Common in general population and common in Parkinson`s disease
- Can lead to daytime somnolence, fatigue and cognitive symptoms
Sleep Disordered Breathing

• Management:
  – If you snore, wake frequently, feel sleepy during daytime, should consider a sleep study
  – CPAP treatment can markedly improve your sleep and daytime sleepiness
Mood and Cognition
Mood Disorders

- Common in Parkinson’s population
- Depression
  - Feelings of sadness for 2+ weeks
  - More predictive of distress than motor disability
  - Cause is unclear
    - Likely involves non-motor pathways (seratonin)
    - Family history, gender (male) increases risk
Mood Disorders

• Common in Parkinson’s population

• Anxiety
  – Feelings of excessive worry
  – Can be subtle personality change or more problematic

• Apathy
  – Lack of mood, feeling “flat”
  – Occurs in 40% of patients
  – More common in men
Mood Disorders

• Management:
  – Exercise
  – Staying socially connected!
  – Medication changes
    • Are symptoms transient / related to wearing off?
  – Consultation with physician
    • GP, neurologist, psychiatrist
  – Psychotherapy
Cognitive Impairment

- Commonly experienced in the Parkinson's population
- Mild cognitive impairment (MCI)
  - May present early in Parkinson's
  - More difficulty with planning and organizing
  - Feeling distracted
- Some develop Parkinson's related Parkinson's related dementia (PD-D)
Cognitive Impairment

• Severity and types of symptoms vary
  – Attention
  – Problem solving (executive functions)
  – Word finding
  – Slow retrieval of information
  – Learning and remembering
  – Visual-spatial
Cognitive Impairment

- Management
  - Lifestyle
    - Good quality sleep
    - Exercising
    - Social engagement
  - Medications
- Discuss any concerns you may have with your neurologist. Bringing a family member to appointment really helpful
Hallucinations and Confusion

• Often reported as harmless, not scary
  – People, sometimes deceased family
  – Children
  – Small animals
• May occur as a manifestation of dementia
• Side effect of medication
• In some cases, may be caused by an illness
Hallucinations and Confusion

Steps to follow:

1. Check for triggering factors
   (infection, dehydration, electrolyte disturbances)
2. Simplify schedule or remove medications
3. Persistent symptoms
   • Requires more formal evaluation
   • Medications can improve cognitive abilities, reduce hallucinations
Pain In Parkinson’s

Wide varieties of pain

- Musculoskeletal: arthritic-like
- “Sciatic-like” distribution (down lower back thru legs)
- Painful spasms or cramp (especially in legs)
- Urge to move legs and body
- Random pain anywhere in body
Pain In Parkinson’s

- Management is complex depending on the nature of pain
- Non Parkinson’s related pain → “Sciatic” pain / arthritis
- Parkinson’s related pain → medications wearing off?
- Other Parkinson’s related pain treatment
  - Consider medication trials
  - Team approach
  - Dedicated pain clinic
Action Items

• Talk to your doctor about at least 1 non-motor symptom you are experiencing

• Collect information to understand the patterns between medications and your symptoms (ex: wearing off)

• Bring a friend or family member to your appointments – they may have better observations of some non-motor symptoms

• Exercise and stay engaged in your community!

• Attend breakout sessions on non-motor symptoms today
Acknowledgments

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