Early Cognitive Symptoms

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Overview

Non-Motor Symptoms in Parkinson’s Disease

Parkinson’s Disease Mild Cognitive Impairment (PD-MCI) definition

Cognitive areas often impacted early in Parkinson’s disease

Prevalence of PD-MCI

Risk factors for PD-MCI

Compensatory strategies for cognitive difficulties in Parkinson’s disease

Promising non-pharmacological interventions for cognitive improvement in Parkinson’s Disease
Cognitive deficits and mood symptoms are two of the most common non-motor symptoms observed in Parkinson’s disease (n=268).

<table>
<thead>
<tr>
<th>Non-motor symptoms</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive impairment</td>
<td>199</td>
<td>74.3%</td>
</tr>
<tr>
<td>Nighttime sleep problems</td>
<td>192</td>
<td>71.6%</td>
</tr>
<tr>
<td>Urinary problems</td>
<td>192</td>
<td>71.6%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>184</td>
<td>68.7%</td>
</tr>
<tr>
<td>Pain</td>
<td>172</td>
<td>64.2%</td>
</tr>
<tr>
<td>Daytime sleepiness</td>
<td>166</td>
<td>61.9%</td>
</tr>
<tr>
<td>Depressed mood</td>
<td>163</td>
<td>60.8%</td>
</tr>
<tr>
<td>Constipation problems</td>
<td>156</td>
<td>58.2%</td>
</tr>
<tr>
<td>Anxious mood</td>
<td>151</td>
<td>56.3%</td>
</tr>
<tr>
<td>Lightheadedness on standing</td>
<td>140</td>
<td>52.2%</td>
</tr>
<tr>
<td>Apathy</td>
<td>122</td>
<td>45.7%</td>
</tr>
<tr>
<td>Hallucinations and psychosis</td>
<td>37</td>
<td>13.8%</td>
</tr>
<tr>
<td>ICDs</td>
<td>21</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

*Abbreviations: ICDs, impulse control disorders*

Kadastik-Eerme et al., *Health and Quality of Life Outcomes*, 2015
Motor vs. Non-Motor Symptom Correlations with Health Related Quality of Life

<table>
<thead>
<tr>
<th></th>
<th>PDQ-39 SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMSS total score</td>
<td>0.70</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>0.26</td>
</tr>
<tr>
<td>Sleep/fatigue</td>
<td>0.58</td>
</tr>
<tr>
<td>Mood/apathy</td>
<td>0.57</td>
</tr>
<tr>
<td>Perceptual problems/hallucinations</td>
<td>0.36</td>
</tr>
<tr>
<td>Attention/memory</td>
<td>0.43</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>0.38</td>
</tr>
<tr>
<td>Urinary</td>
<td>0.41</td>
</tr>
<tr>
<td>Sexual dysfunction</td>
<td>0.14</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0.42</td>
</tr>
<tr>
<td>Number of non-motor symptoms</td>
<td>0.63</td>
</tr>
<tr>
<td>SCOPA-motor</td>
<td>0.58</td>
</tr>
<tr>
<td>Motor examination</td>
<td>0.43</td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>0.58</td>
</tr>
<tr>
<td>Motor complications</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Health Related Quality of Life
Non-Motor Symptoms
Cognition and Mood
Motor Symptoms

Martinez-Martin et al., Movement Disorders, 2011
Cognition In Parkinson’s Disease
Understanding Cognition in PD: Why is it important?

Parkinson’s Disease Normal Cognition (PD-NC)

Parkinson’s Disease-Mild Cognitive Impairment (PD-MCI)

Parkinson’s Disease Dementia (PDD)
Understanding Cognition in PD: Why is it important?

- Normal Cognition
- PD-MCI
- PDD

Better Cognition

Time
Understanding Cognition in PD: Why is it important?

• Increasing evidence that cognitive problems are present at the time of PD diagnosis and possibly before diagnosis.

• Early detection will allow for earlier intervention.

• Mild cognitive problems can impact day-to-day functioning.
What is Parkinson’s Disease- Mild Cognitive Impairment (PD-MCI)?

- Thought to be a transition state from normal cognition to dementia
- Deficits in at least one area of cognitive functioning (e.g., memory, problem solving, attention)
- Represents a decline from previous level of function
- Does not result in significant problems performing activities of daily living
Early Cognitive Changes in PD

- Executive Functioning: Problem solving, abstract reasoning, multi-tasking, inhibition.
- Attention/Working Memory: Focus, divided, or sustained; maintain and manipulate information in short term memory.
- Processing Speed: Rapid processing of information.
- Memory: Encoding and retrieval.
- Visual Cognition: Spatial judgment and visuoconstruction.
Areas of No Cognitive Change in PD

• Language: Simple production, comprehension, and word finding.

• Visual Cognition: Simple object recognition.
How Frequent is Parkinson’s Disease- Mild Cognitive Impairment (PD-MCI)?

- Initial estimates of the prevalence ranged from 18.9 - 38.2% with an average of 26.7% (Litvan et al., 2011).

- Other studies with large samples of patients with varying degrees of disease duration have shown 26% meet criteria for PD-MCI (e.g., Aarsland et al., 2010).

- Using the current “gold standard” definition of PD-MCI, estimates range from 20-41%, with an average of 32.4% in newly diagnosed patients (Weintraub et al., 2018).
What is Parkinson’s Disease Dementia (PDD)

- It is *not* Alzheimer’s Disease
- Deficits in at least two areas of cognitive functioning (e.g., memory, problem solving, attention)
- Represents a decline from previous level of functioning
- Result in significant problems in performing complex activities of daily living above and beyond what is due to other symptoms associated with Parkinson’s disease
Transition from Normal Cognition to PD-MCI

Approximately 50% of PD patients who, at the start of the study had normal cognition, developed PD-MCI after 6 years.

Transition from Normal Cognition to PD-MCI

123 newly diagnosed patients

35% had PD-MCI at baseline; 65% cognitively normal

50% had PD-MCI after 3 years; 50% cognitively normal

Risk Factors for PD-MCI

• Older age.

• Greater cognitive impairment.

• Problems with smell or taste.

• Sleep disturbances (i.e., RBD).

• Mood symptoms (depression, anxiety, apathy).

• Greater motor symptoms.
Specific Strategies for Working with Cognitive Symptoms

Executive Functioning Problems:

• Provide concrete instructions and stay away from abstract constructs.

• Reduce amount of information that must be maintained in working memory.

• Minimize multi-tasking requirements.
Specific Strategies for Working with Cognitive Symptoms

Memory:

- Lessen retrieval requirements by providing choices or cues.
- Provide information with greater context.
- Allow for breaks in between learning new information.
- Use both verbal and visual cues.
Specific Strategies for Working with Cognitive Symptoms

Visual Cognition:

• Reduce amount of external stimuli (e.g., encourage reduction of clutter in home).

• Allow activities to occur in more open environments.

• Make use of walkers or canes to ambulate.
Flattening That Line

Better Cognition vs. Time

Normal Cognition

PD-MCI

PDD
Promising Non-Pharmacological Interventions for Improving Cognition in Parkinson’s Disease

Cognitive Rehabilitation
- Restorative (e.g., video games, cognitive practice)
- Compensatory (e.g., mnemonics, smart-phones, pill boxes)

Physical Activity
- Aerobic (e.g., stationary bike, swimming)
- Skill-based (e.g., boxing, Tango)
- Balance (e.g., Tai Chi, yoga)

Emotional
- Mood treatment (psychotherapy, medications, support group)
- Socialization (e.g., spending time with family and friends)
- Meditation
- Mindfulness Training
Cognitive deficits are prevalent in Parkinson’s disease, even in newly diagnosed individuals.

Certain areas of cognition, such as executive functions, are impacted earlier than other areas.

There are emerging approaches to treat and perhaps delay cognitive decline.

Much work is needed in this area of research and clinical treatment.
Thank You!

Interested in receiving slides or asking questions:

vfiloteo@ucsd.edu

Interested in research:

858-552-8585 ext. 5593