Parkinson’s Disease and Cognitive Functioning

Alona Ramati, PhD, ABPP-CN
Neuropsychology Service
NorthShore University HealthSystem
Historical Perspective

• The adverse effects that PD can have on cognition were identified as early as the 1920s

• Current studies examine the neural substrates and cognitive mechanisms underlying neuropsychological deficits
  – Assist with differential diagnosis
  – Monitor treatment outcome and disease progression
Cognitive Functioning in PD

- Pattern of cognitive impairment consistent with subcortical involvement
- Early neurobehavioral changes include
  - Slowed processing speed
  - Difficulties with learning and retrieval of information
  - Executive impairment
- Attentional impairment emerges as task demands increase
Cognitive Functioning in PD (cont.)

- Difficulties with word fluency
  - Preserved semantic knowledge
- Difficulties with visuospatial abilities
  - Visuospatial judgment
  - Facial recognition
  - Copy of complex figures
- Preserved intelligence
Neuroanatomical Correlates

- Neuropathological changes in frontostriatal circuitry
- Presence of Lewy bodies
- Neurochemical changes in mesocortical and mesolimbic systems
- Blood flow changes in basal ganglia and frontal cortex
Prevalence of Cognitive Dysfunction in PD

- 25% to 36% of patients present with detectable cognitive decline at time of diagnosis
- Dementia prevalence rates 20%-40%
- Dementia incidence 3% < 60 years, 15% > 80 years
Prevalence of Cognitive Dysfunction in PD (cont.)

- Gait and postural abnormalities are more likely to show cognitive decline as compared to tremor predominant patients.
- Development of postural instability and gait changes in patients with tremor increases the risk of cognitive impairment.
PD and Emotional Functioning

• Mood
  – Prevalence of depression 42%
  – Suicide rate <1%
  – Symptoms overlap between depression and PD
  – Demonstrated utility for CBT

• Anxiety
  – Prevalence of anxiety symptoms 50%
  – Highly comorbid with depression
  – Features of generalized anxiety, social phobia, panic and obsessive-compulsive disorder
Role of Neuropsychological Assessment in PD

- Provide objective appraisal of cognitive ability
- Assist with differentiating disease-related cognitive difficulties from those that may be associated with an underlying mood disturbance or fatigue
- Counsel patients and their families as to impact of illness on activities of daily living
- Assist with determining competency, disability, return to work or vocational planning
Cognitive Rehabilitation

• Reduce cognitive impairment

• Develop compensatory strategies to minimize impact of cognitive deficits on activities of daily living

• Increase awareness of impact of cognitive difficulties on professional and social functioning

• Treatment plan and strategies are adapted to meet an individual’s needs
Practical Rehabilitation Strategies

• Attention
  – Identify distractions and take action to minimize them
    » External distractions
      – Use headphones, ear plugs, limit clutter, choose environment with fewer people
    » Internal distractions
      – Follow a written plan of daily tasks
      – Quickly write down intrusive ideas for later review, rather than shift attention to new thought
  – Receive the same information in multiple complementary modalities (hearing, reading, writing)
Practical Rehabilitation Strategies (cont.)

- Memory
  - Practice synthesizing main elements and filtering out extraneous details
    » Ask clarifying questions
  - Learning to take effective notes
    » Structured
    » Consistent
    » Prompts to write and review notes
  - Break new information into smaller units to be rehearsed
    » Make associations
  - Use environmental memory aids (calendar, memory book, dairy, pill box, alarm clock)
Cognitive Functioning in PD: Summary

- PD can affect cognitive functioning in some patients
- Early indicators include difficulties with processing speed, memory, visuospatial and executive abilities
- Risk for dementia increases with age
- Mood and anxiety disorders are also prevalent
- Neuropsychological examination can clarify cognitive and emotional status and assist with diagnostic and treatment considerations