Parkinson's Disease and Cognitive Functioning

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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