

The PD You Don't See: Cognitive Symptoms

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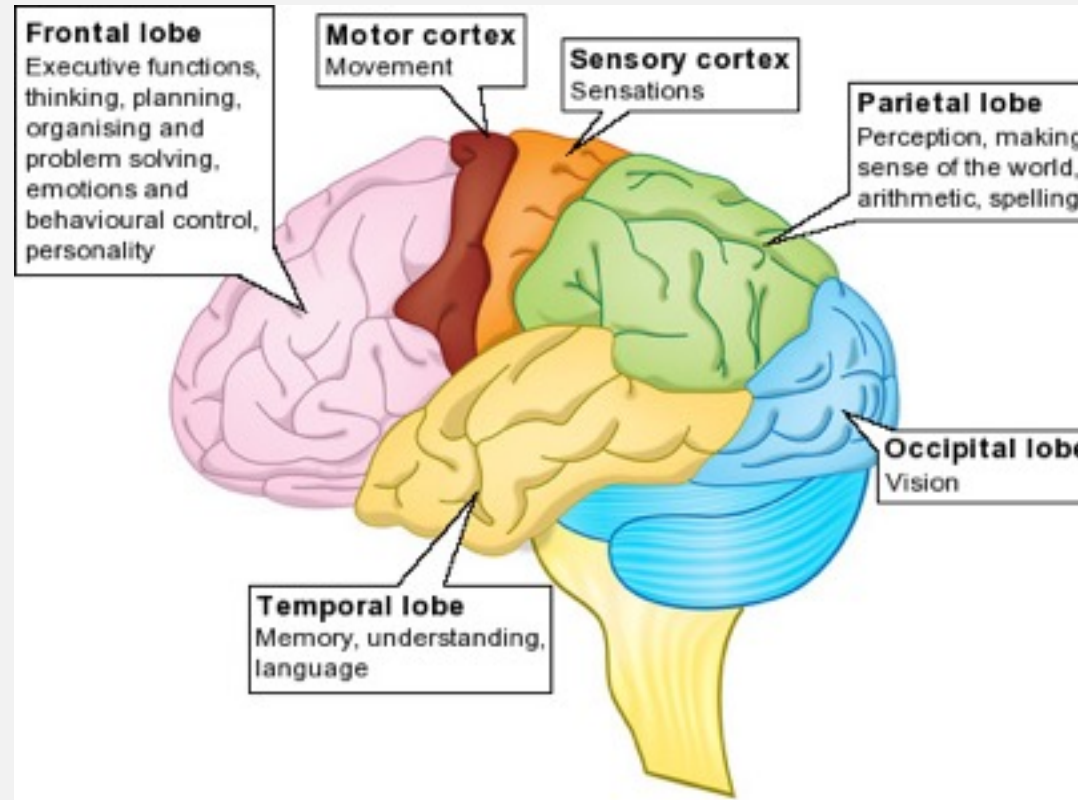
OBJECTIVES

- To understand why cognitive changes occur in a “motor” disease
- To identify common cognitive changes in PD
- To understand how these changes affect day-to-day functioning
- To learn techniques for managing these challenges

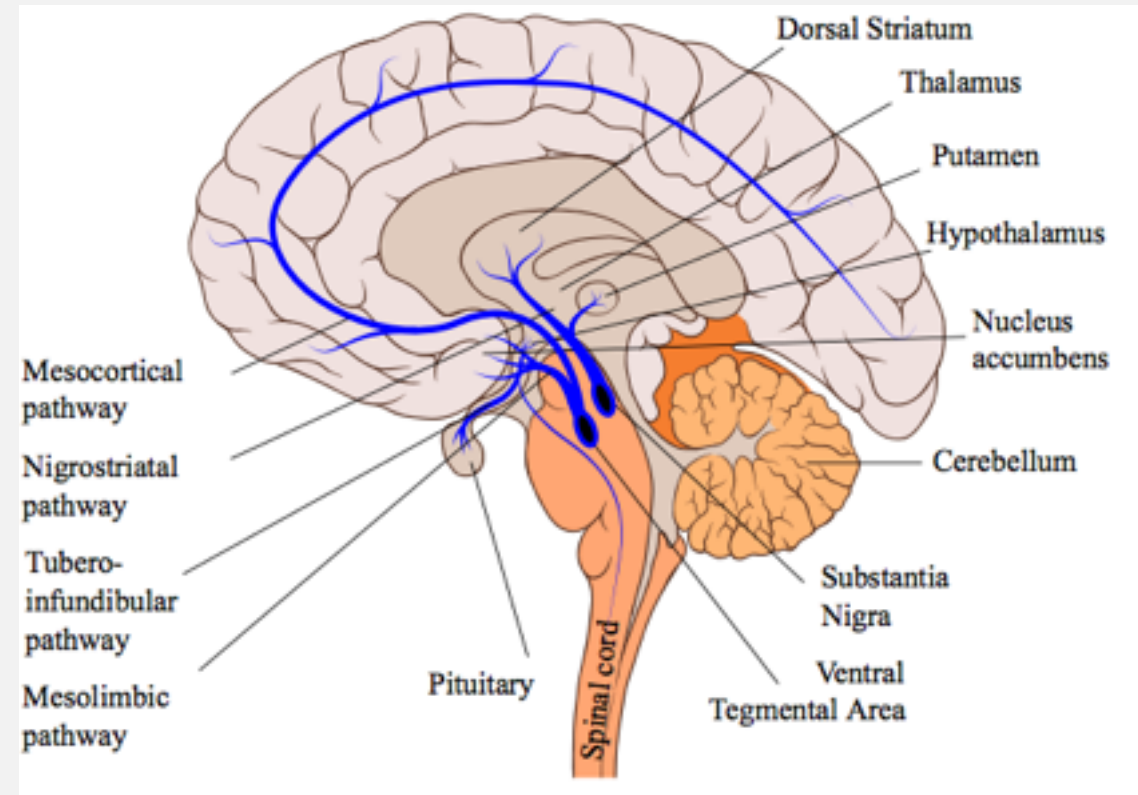
WHY DO NON-MOTOR SYMPTOMS OCCUR?

- Direct result of Parkinson's disease
 - Loss of neurotransmitter input into the basal ganglia and frontal lobes interferes with communication between the thinking and emotional centers of the brain
- Indirect result of levodopa treatment
 - Cognitive side effects, dysphagia, anxiety, depression, fatigue, excessive sweating, inner restlessness, pain, dizziness, bladder urgency

BRAIN COGNITION RELATIONSHIP



DOPAMINE PATHWAYS



EFFECTS OF DOPAMINE REPLACEMENT

- Improvement in working memory, planning, and sequencing because of normalization of dopamine in the dorsal striatum
- Impairment of reward learning because of overstimulation of healthy ventral striatum

COGNITIVE PROBLEMS RELATED TO PD

ABOUT THAT ELEPHANT...



"I'm right there in the room, and no one even acknowledges me."

COGNITIVE PROBLEMS ARE COMMON BUT OFTEN MANAGEABLE

- ~95% will experience some change in thinking usually executive dysfunction (Pirozzolo 1982 et al., Bassett 2005)
- ~25 – 30% of people with PD will develop dementia in advanced disease (Aarsland et al., 2005)

WHAT EXACTLY IS DEMENTIA?

- Problems in thinking that are severe enough to interfere with the ability to carry out day-to-day tasks
- There are many different causes of dementia
- Parkinson's disease is one
- Dementia may be related to disruption of cholinergic system rather than dopaminergic system

EXECUTIVE FUNCTIONS

- Alter behavior based on feedback from the environment
- Initiation and motivation
- Difficulty with problem solving
- Planning and organizing
- Decision making
- Retrieval of information (including words)

EXECUTIVE DYSFUNCTION IN LIFE

- Stuck on topics
 - Reassure and redirect
- Difficulty solving problems and changing strategies
 - Take a break, get advice, ask for help
- Problems with planning and sequencing steps
 - Start early, make a list, finish one step to completion

MORE...EXECUTIVE DYSFUNCTION

- Disorganization
 - Reduce clutter, hire someone to help set up system
- Problems retrieving information from memory like words and details
 - Do not fight it, ask for cues, sing
- Decision making
 - List out pros and cons, seek advice, limit options

ATTENTION AND WORKING MEMORY

- Waxing and waning alertness
- Sustained concentration
- Ability to hold information online to do something with it
- Holding your train of thought

INATTENTION & WORKING MEMORY IN LIFE

- Losing train of thought
 - Avoid multitasking, keep it simple, do not interrupt
- Difficulty holding phone numbers, instructions, and lists
 - Jot it down, ask for repetition, chunk it

MORE...

- Forgetting purpose
 - Practice Mindfulness, rehearse aloud, avoid multitasking
- Fluctuations in alertness
 - ID best times, nap, discuss med list with physician

MEMORY

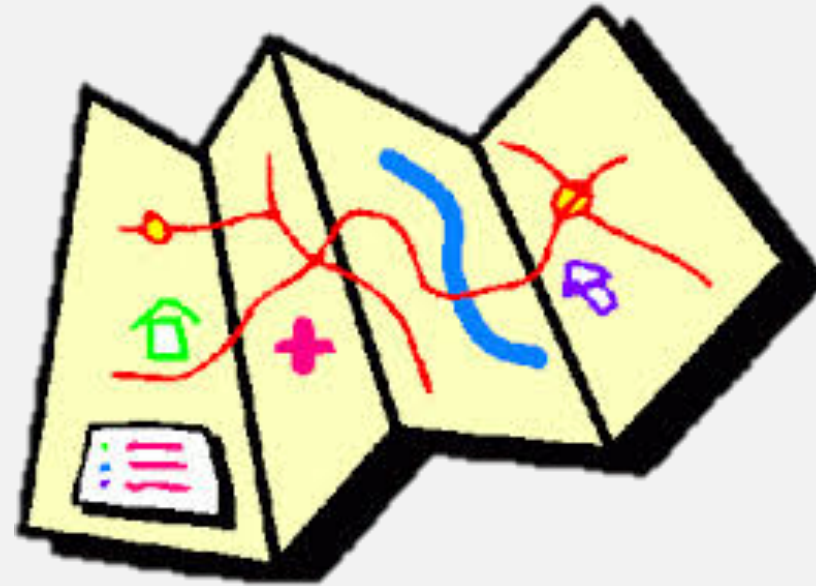
- Difficulty learning new facts, procedures, instructions
- Difficulty storing that information over a time period
- Difficulty retrieving the information when needed

MEMORY PROBLEMS IN LIFE

- Forgetfulness for instructions, lists, appointments
 - Rely on to-do lists, calendars, “Smartphone” reminders
- Facts “slip” your mind
 - Set up cues for yourself
- Frustration with care partner due to forgetfulness
 - State, rephrase, repeat, write it down

VISUOSPATIAL FUNCTIONS

- Depth perception
- Mental rotation of designs
- Construction
- Copying
- Motion perception



VISUOSPATIAL DEFICITS IN LIFE?

- Visual hallucinations and misidentifications
 - Reduce shadows, reduce mirrors, talk to physician
- Bumping into furniture, tripping down stairs, failing to navigate distances
 - Mark stairs, use assistive devices, rehab balance
- Inability to follow a map
 - Use GPS, map out route ahead of time, travel wisely

BEATING THE CHALLENGES

NOW WHAT?

- Recognize that you are not “crazy” or “lazy”
- Speak to your movement disorder specialist
- Look out for medication side-effects
- Have the issues evaluated so that a targeted treatment plan can be developed
- Discuss the problems with others who you trust

RIVASTIGMINE

- The only FDA medication for Parkinson's Disease Dementia
- Increases the amount of acetylcholine available to the brain
- Demonstrated efficacy in improving global confusion, attention, and executive functions BUT
- Side effects included nausea, vomiting, and diarrhea

(Szeto & Lewis, 2016; Emre et al., 2014)

COGNITIVE REHABILITATION

- Computer-based attention and working memory training tests have benefit in individuals with mild problems in these areas (Cerasa, 2014).
- A structured intervention (Neurovitalis) maintained cognitive functions for a year follow-up (Petrelli, 2015)
- Cognitive rehab can improve working memory, executive functioning, and processing speed (Leung et al., 2015)
- Goal-oriented cognitive rehabilitation is a underway

PHYSICAL EXERCISE

- Four-weeks of treadmill training improved executive functions as well as gait and mood (Picelli, 2016).
- Aerobic and anabolic exercise improved executive functions (Reynolds et al., 2016, Uc et al., 2014).
- Consider exercises that link mental and physical attention
 - Noncontact boxing
 - Yoga
 - Tai Chi

MANAGING COGNITIVE PROBLEMS DAILY

- Limit distractions
- Use calendars, cues, and reminders
- Maintain a consistent schedule
- Simplify tasks into single steps
- Remind others to slow down
- ID “best times” of the day
- Do not over-schedule/reduce stress

