

PD: NON-MOTOR SYMPTOMS, MIND AND MEMORY CHANGES

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AN
ESSAY
ON THE
SHAKING PALSY.

CHAPTER I.

DEFINITION—HISTORY—ILLUSTRATIVE CASES.

SHAKING PALSY. (*Paralysis Agitans.*)

Involuntary tremulous motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forward, and to pass from a walking to a running pace; the senses and intellects being uninjured.

Initial description of PD stated that the “senses and intellects being uninjured”

Now, PD specialists independently assess both “Motor” and “Non-motor” symptoms



The Spectrum of PD Non-Motor Symptoms

Loss of smell
Constipation
REM Sleep Behavior
disorder/Insomnia
Sexual Problems
Pain Syndromes

Mild Memory Problems
Moderate Memory
Problems & Dementia
Hallucinations
Depression & Apathy
Anxiety

Orthostatic Hypotension
Urinary Urgency Urinary
Incontinence Excessive
Sweating Excessive
Salivation Swallowing
Problems



Why are Non-Motor Symptoms so difficult to understand and treat?

- The motor symptoms are more 'obvious'
- Impact of non-motor symptoms on quality of life has only been recognized by physicians for the past 15 years
- There is much more variability in the type and severity of non-motor symptoms experienced by any single patient.
- Because of this variability non-motor symptoms are harder to study.



What can you do to better treat your non-motor symptoms?

- Recognize them and tell you doctor about them.
- Figure out if your non-motor symptoms do or do not improve with your regular Parkinson's disease medications.
 - Make a diary!



Scenario 1: Non-motor symptom improves with dopamine

Time of Day	Medication Taken	Symptoms
7:00 am	1 25/100 sinemet	
7:30 am		
8:00 am		
8:30 am		
9:00 am		Symptom A starts
9:30 am		Symptom A continues
10:00 am	1 25/100 sinemet	Symptom A continues
10:30 am		Symptom A ends
11:00 am		
11:30 am		
12:00 pm		Symptom A starts
12:30 pm		Symptom A continues
1:00 pm	1 25/100 sinemet	Symptom A continues
1:30 pm		Symptom A ends
2:00 pm		



Scenario 2: Non-motor symptom worsens with dopamine

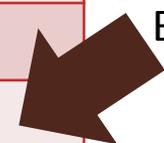
Time of Day	Medication Taken	Symptoms
7:00 am	1 25/100 sinemet	
7:30 am		Symptom A starts
8:00 am		Symptom A ends
8:30 am		
9:00 am		
9:30 am		
10:00 am	1 25/100 sinemet	
10:30 am		Symptom A starts
11:00 am		Symptom A ends
11:30 am		
12:00 pm		
12:30 pm		
1:00 pm	1 25/100 sinemet	
1:30 pm		Symptom A starts
2:00 pm		Symptom A ends



Scenario 3: Non-motor symptom is independent of dopamine

Time of Day	Medication Taken	Symptoms
7:00 am	1 25/100 sinemet	
7:30 am		Symptom A starts
8:00 am		Symptom A continues
8:30 am		Symptom A ends
9:00 am		
9:30 am		
10:00 am	1 25/100 sinemet	
10:30 am		
11:00 am		
11:30 am		
12:00 pm		Symptom A starts
12:30 pm		Symptom A continues
1:00 pm	1 25/100 sinemet	Symptom A continues
1:30 pm		Symptom A continues
2:00 pm		Symptom A ends

Breakfast



Lunch



Why is it important to treat Non-Motor symptoms?

- They can impact quality of life just as much as the motor symptoms
- They can actually *WORSEN* your motor and other non-motor symptoms
 - Tremor can worsen when you are constipated
 - Memory can worsen when you do not sleep or when you are anxious



Who treats Non-Motor Symptoms?

- It takes a team!
- Having a really good primary care doctor can make a big difference in the treatment of your non-motor symptoms.
- Primary Care Doctors are great at treating:
 - Constipation
 - Depression
 - Insomnia
 - Blood Pressure issues
- Sometimes other specialists can help as well (Urology, Gastroenterology, Psychiatry etc).



How to get the most out of your neurology/movement disorders visit.

- Make sure the computer system has the correct Primary Care Doctor listed.
- Ask your neurologist to send the Neurology clinic note to your Primary Care Doctor.
- Make a list of your non-motor symptoms listed from the most important/bothersome to the least important/bothersome (help your doctor prioritize!).
- Keep a diary so you can figure out what helps and what hurts your non-motor symptoms.



PD Non-Motor symptoms:

What about Mind and Memory Changes?

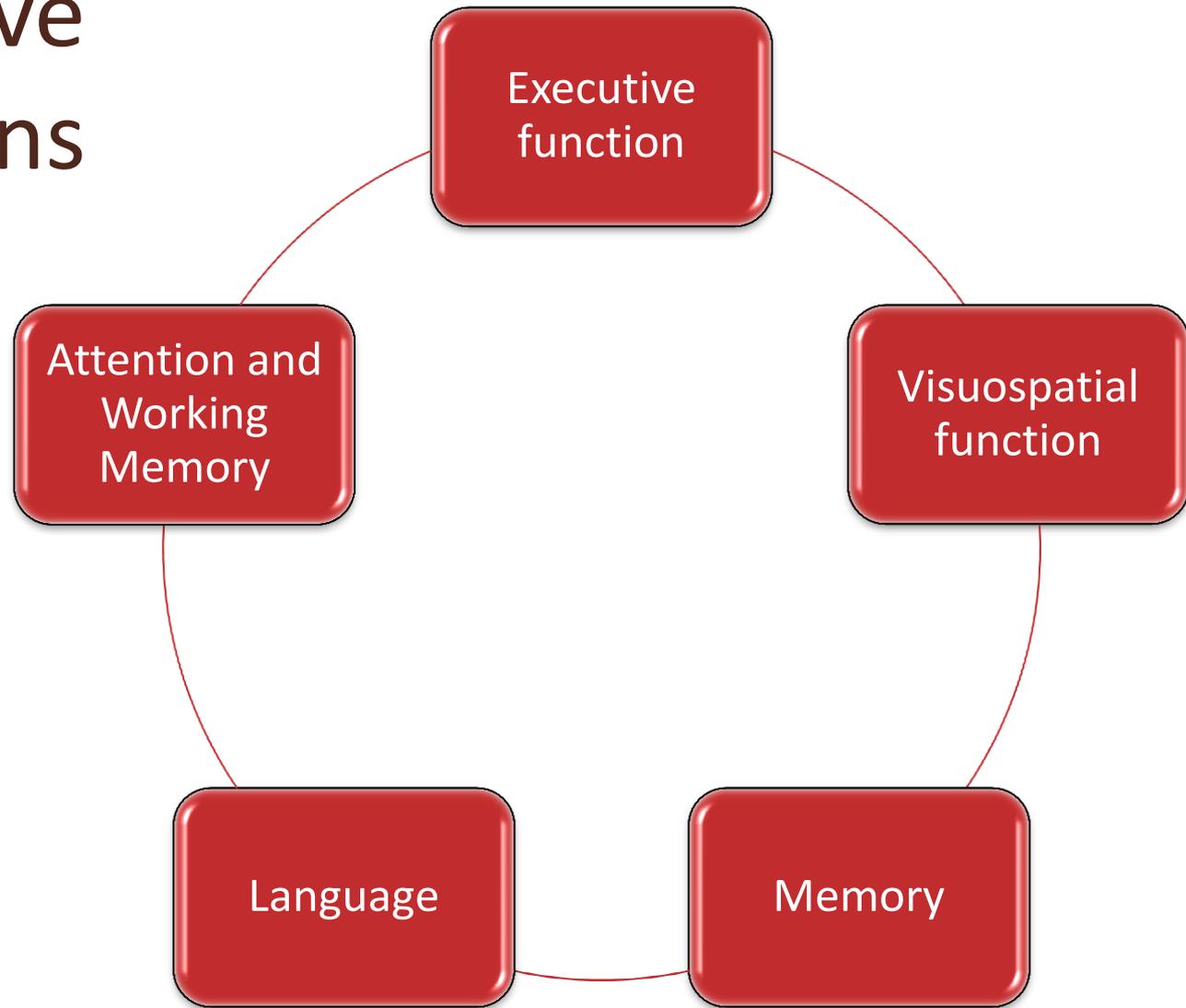
- What type of mind and memory changes can be seen in a person with Parkinson's disease?
- What causes these memory changes?
- What can be done to prevent or treat these memory changes?



What type of mind and memory changes can be seen in a person with Parkinson's disease?



Cognitive Domains



Memory

On your way out the door your spouse asks you: **“Can you pick up some milk while you are at the store?”**



Memory

- Encoding
- Maintenance
- Retrieval



Attention and Working Memory

- A friend tells you a 10 digit phone number – you keep it in your mind for about 30 seconds while you look for a pen and paper to write it down



Executive Function

- The cognitive processes that dictate flexible and dynamic adjustment of performance in response to a changing environment.

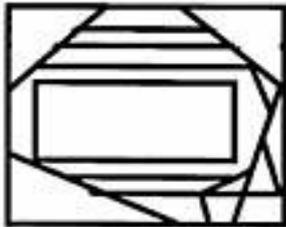
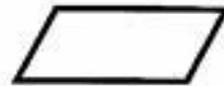


Executive Function - examples

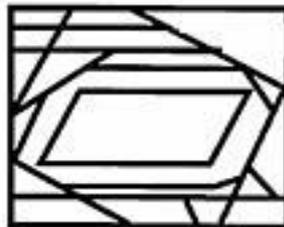
- Planning/organizing
- Complex or novel problem-solving
- Shifting attention, keeping track of, or alternating from 1 task to another
- Not being susceptible to distractions
- Generating fluent sequence of thought or words
- Learning the rules of a new task without direction or explicit cueing



Visuospatial Function



1



2



3



4



Visuospatial Function

- Problems with parking the car or clipping corners when driving
- Problems with directions somewhere that is not familiar



Language

- Names of objects and people
- Problems can be simple
 - ‘Tip of the tongue’
- Problems can be more severe
 - You can't remember the name of something you use regularly.



What is dementia?

- A person who can no longer do an activity of daily living because of a cognitive impairment has dementia.
- Examples:
 - Can no longer pay the bills correctly
 - Gets lost when driving
 - Cannot shop for groceries



PD: Mind and Memory Changes

- What type of memory and thinking changes can be seen in person's with Parkinson's disease?
- **What causes these memory changes?**
- What can be done to prevent or treat these memory changes?



Can Parkinson's disease alone cause memory problems?

- Yes, but we don't understand why some people get more severe memory problems and others do not.
- Sometimes other factors can contribute, like small strokes.
- It is possible for some patients with Parkinson's disease to also get Alzheimer's disease.



PD: Mind and Memory Changes

- What type of memory and thinking changes can be seen in person's with Parkinson's disease?
- What causes these memory changes?
- What can be done to prevent or treat these memory changes?



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- Dopamine
- Treat other conditions
- Medications
- Cognitive tests
- The future



Know what the problem is.



- Neuropsychological testing is used to understand how a person is doing in each cognitive domain.
- Understanding the problem is the first step in adapting to it.
- Change over time is more helpful than performance at one time point.



What can be done to prevent or treat these memory changes?

- Know what the problem is
- **Exercise**
- Dopamine
- Treat other conditions
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Exercise – really? For Memory?

YES!

- In animal studies of Alzheimer's disease and Parkinson's disease – mice who are physically active have less pathology in the brain than those who are sedentary.



Exercise – what kind?

- The best exercise is not exactly known

- Exercise bike



- Tai Chi – good for balance
- Most important – something that is safe and something that you enjoy



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- **Dopamine**
- Medications
- Treat other conditions
- Cognitive tests
- The future



Dopamine



- It is unclear if dopamine replacement medications (dopamine agonists or levodopa) help with cognitive changes.
- In patients who have hallucinations, all dopamine replacement medications can make the hallucinations worse.



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- Dopamine
- **Treat other conditions**
- Medications
- Cognitive tests
- The future



Treat other conditions that make memory worse.

- Depression and Anxiety
- Medications (sedatives and pain killers)
- Sleeping problems
- General illness (like a urinary tract infection)



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- Dopamine
- Treat other conditions
- **Medications**
- Cognitive tests
- The future



Medications

- Drugs originally developed for Alzheimer's disease have been approved in Parkinson's disease
 - Donepezil (Aricept)
 - Galantamine (Razadyne)
 - Rivastigmine (Exelon) – pill or patch
- Drugs for Alzheimer's disease that have NOT been approved in Parkinson's disease
 - Memantine (Namenda)



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- Dopamine
- Treat other conditions
- Medications
- **Cognitive tests**
- The future



Cognitive tests



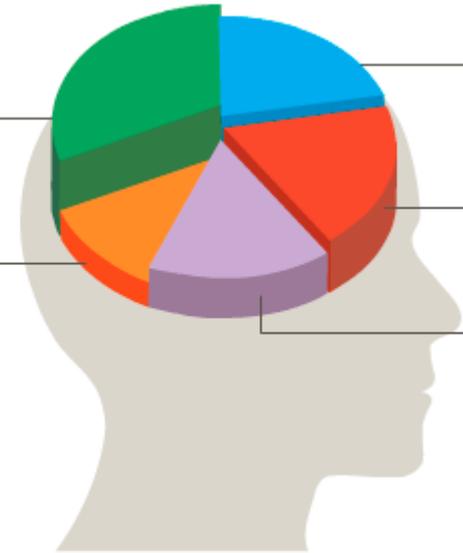
Memory

Problem Solving

Attention

Speed

Flexibility



Already have

Improve your brain health and performance

Build your Personal Training Program

- Enhance memory and attention
- Web-based personal training program
- Track changes in brain performance

Get Started Now

Multiple studies have shown mixed results regarding these 'brain training' programs.



What can be done to prevent or treat these memory changes?

- Know what the problem is
- Exercise
- Dopamine
- Treat other conditions
- Medications
- Cognitive tests
- The future



The Future

- Consider participating in research studies focused on understanding the mind and memory changes that can happen as part of normal aging and in people with Parkinson's disease

DID YOU KNOW

- 30% of all clinical trials fail to recruit a single person
- 85% of clinical trials face delays due to limited participation
- Fewer than 10% of Parkinson's patients ever take part in trials, despite overwhelming interest in working with scientists to help speed treatment breakthroughs



Research opportunities at Stanford

The Stanford Alzheimer's disease Research Center (ADRC)

- NIH/NIA funded 5 year study to understand mind and memory problems in Parkinson's disease and Alzheimer's disease
- We are currently recruiting people with Parkinson's disease who do not have memory problems and who have mild to moderate memory problems.
- We are also recruiting non-Parkinson's disease participants.
- 3 days the first year, then 1-2 days/year for 5 years.



The Stanford ADRC



med.stanford.edu/ADRC



Research opportunities at Stanford

Brain Imaging in Parkinson's disease

- NIH funded Study to understand the connection between memory and balance problems.
- We are currently recruiting people with Parkinson's disease who have fairly good memory and thinking for their age.
- We are also recruiting non-Parkinson's disease participants.
- Total commitment: 3 days



A FEASIBILITY CLINICAL TRIAL OF THE MANAGEMENT OF THE MEDICALLY-REFRACTORY DYSKINESIA SYMPTOMS OF ADVANCED IDIOPATHIC PARKINSON'S DISEASE WITH UNILATERAL LESIONING OF THE GLOBUS PALLIDUM USING THE EXABLATE TRANSCRANIAL SYSTEM

- **Objective:**

Evaluate the safety and initial efficacy of the ExAblate Transcranial system to treat medication-refractory symptoms of Parkinson's Disease.

- **Design:** Prospective, single-arm, open-label clinical trial
- **Population:** 20 treated subjects at up to **5** centers
- **Treatment:** ExAblate 4000 system
- **Follow-up:** 1-Day, 1-Week, 1-Month, 3-Month, 6-Month, 12-Month and 24-Month

Research opportunities Elsewhere

Check out the Michael J Fox foundation
FoxTrialFinder!

- **FoxTrialFinder.michaeljfox.org**
- Local, national, and international studies
- Tell your friends! (they can participate as non-PD participants in studies near where they live).



In conclusion

- Non-Motor symptoms are an important part of Parkinson's disease, so talk to your doctor!
- Understanding if you have mind and memory changes can help you to better adapt.
- Exercise, treating other things like depression, and some medications might help your mind and memory changes.
- Consider getting involved with research - FoxTrialFinder.michaeljfox.org



Thank you

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