

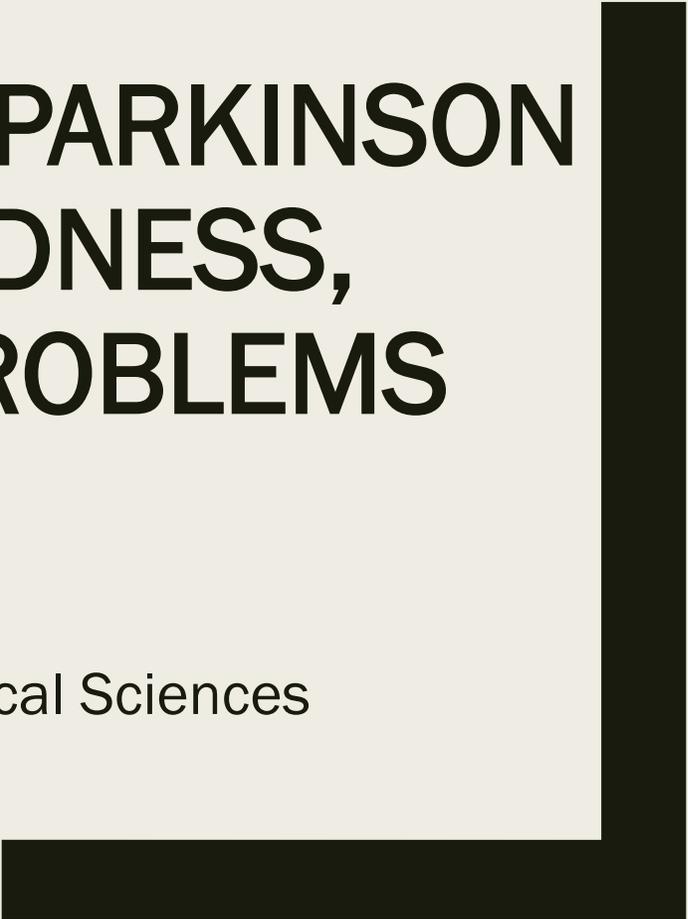


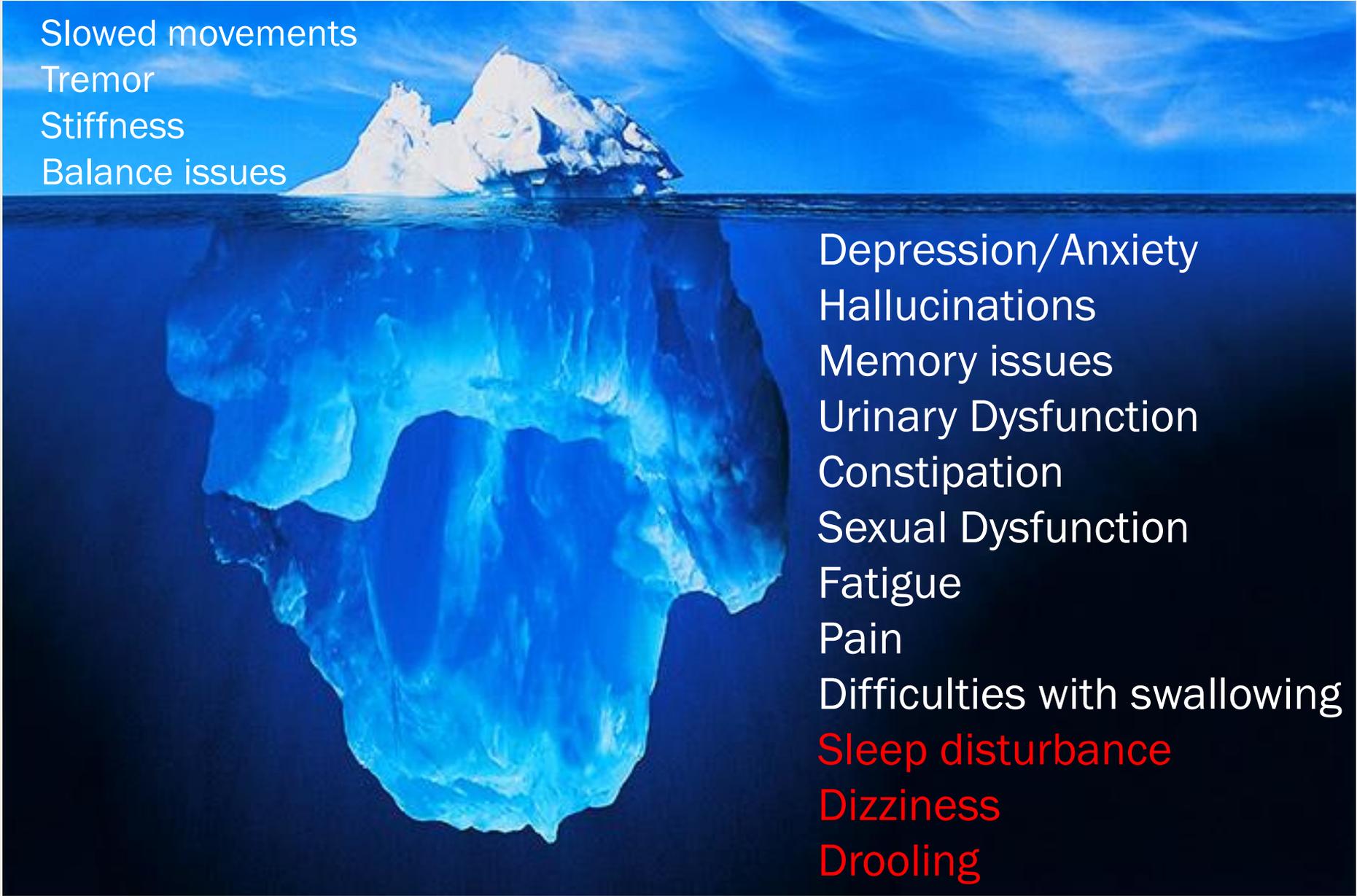
NON-MOTOR SYMPTOMS IN PARKINSON DISEASE: LIGHT HEADEDNESS, DROOLING AND SLEEP PROBLEMS

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An iceberg floating in the ocean. The tip of the iceberg is above the water line, and the much larger, submerged part is below. The sky is blue with light clouds, and the water is a deep blue. The iceberg is white and jagged.

Slowed movements
Tremor
Stiffness
Balance issues

Depression/Anxiety
Hallucinations
Memory issues
Urinary Dysfunction
Constipation
Sexual Dysfunction
Fatigue
Pain
Difficulties with swallowing
Sleep disturbance
Dizziness
Drooling

Non-Motor Symptoms

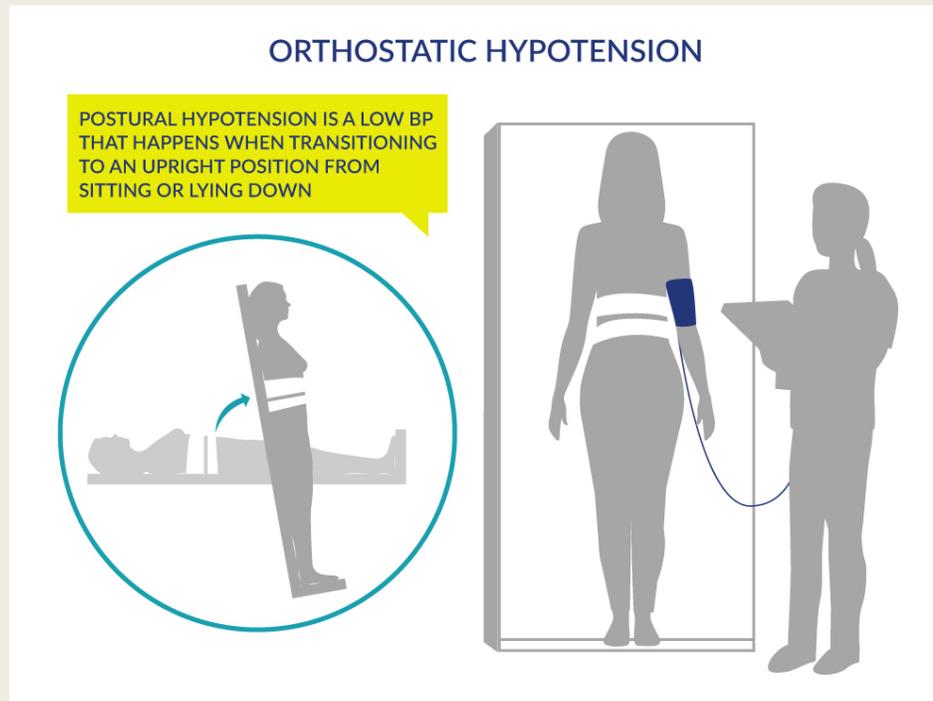
- Dizziness

- Sleep disturbance

- Drooling

Why do I get dizzy/lightheaded?

- Often due to drop in blood pressure when changing positions or when standing for long periods
 - Orthostatic hypotension or Postural hypotension



Why do I get dizzy/lightheaded?

- Orthostatic hypotension can also cause other symptoms:
 - *Fainting (“passing out”)*
 - *Unexplained falls*
 - *Generalized weakness*
 - *Sleepiness or fatigue*
 - *Dull pain covering neck and shoulders (“coat hanger” pain)*
 - *Blurring of vision*
 - *Cognitive changes (feeling slow, sluggish)*
 - Due to reduced blood flow to the brain

Orthostatic hypotension

- Very common in Parkinson's (40-60% experience it), caused by:
 - *PD itself*
 - *Medications to treat PD*
- Common triggers
 - *Quick change of position (laying to standing, seated to standing)*
 - *Exercise*
 - ***Dehydration***
 - *Eating*
 - *Taking hot shower/bath*
 - *Alcohol*

Orthostatic hypotension: Why does this occur?

- When we stand up, gravity pulls our blood down to the expandable venous system in the lower body
- This fluid shift causes less blood flow return to the heart so it pumps less blood and then causes a drop in the blood pressure
- This drop in blood pressure is detected by special pressure sensors in the major arteries of the body and triggers increased heart rate and constriction of blood vessels via release of **norepinephrine** which normally acts to restore the blood pressure.
 - *This automatic reflex is controlled by our nervous system*
- Orthostatic hypotension can occur when this system fails
 - *In PD there is reduced levels of norepinephrine and the heart has changes that don't allow it to receive the signal as well; thus the heart does not pump faster and the blood vessels do not constrict resulting in a drop in the blood pressure*

Orthostatic hypotension

- How to test for orthostatic hypotension:

- 1) *Take blood pressure 3-5 minutes after sitting*
- 2) *Re-take blood pressure again after 3 minutes after standing up*
- 3) *If the top number (the systolic BP) drops by 20 or more points or if the bottom number (the diastolic BP) drops by 10 points = orthostatic hypotension*
 - For example: 145/80 sitting but drops to 125/70 when standing



Ways to treat orthostatic hypotension

- Change positions slowly
 - *Rise slowly from reclined to sitting; sitting to standing*

- Increase salt consumption



- Increase water intake (up to 2.5 Liters per day)



Ways to treat orthostatic hypotension

- Sleep with the head of the bed raised
 - *4-6 inches or about 30 degrees elevated*



- Physical activity with recumbent exercises (eg, stationary bicycle, rowing machine) or in a swimming pool

Ways to treat orthostatic hypotension

- Being careful about prolonged standing or exercise after a meal or when body temperature is elevated (fever, hot climate, hot shower/bath)
- Physical counter maneuvers (clenching leg muscles, leg crossing/uncrossing, buttock clenching)
- Compression waist-high stockings that produce at least 15-20 mm Hg pressure
 - *Knee or thigh-high stockings do not cut it!*



Ways to treat orthostatic hypotension

- Abdominal binder



- Drink 1-2 large glasses of COLD water before provoking activity
- Work with your doctors about lower high blood pressure medication or other medications that can lower blood pressure



Ways to treat orthostatic hypotension

- Medications
 - **Midodrine**
 - Works by increasing the tone in blood vessels, causing them to tighten and increase blood pressure
 - **Fludrocortisone**
 - Works by reducing salt lost by the kidneys – retaining salt increases volume in blood and increases blood pressure
 - **Pyridostigmine**
 - Works by increasing blood pressure when standing, helps maintain the autonomic response
 - **Droxidopa (Northera)**
 - The only FDA approved drug for neurogenic orthostatic hypotension
 - It is converted into **norepinephrine** which acts to increase blood pressure via the autonomic response
- **Must monitor for high blood pressure – especially when laying down; as it can go too high**

Non-Motor Symptoms

- Dizziness

- Sleep disturbance

- Drooling

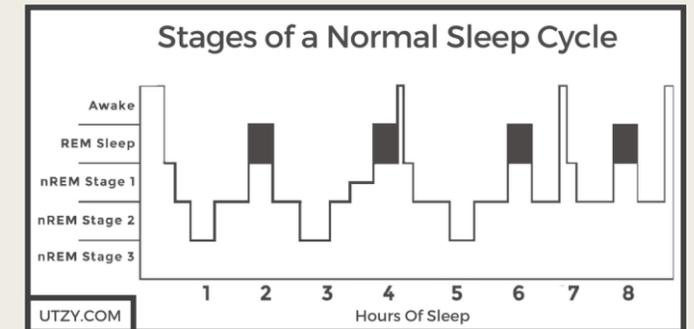
Sleep disturbance



- Sleeping difficulty is common in Parkinson's disease
 - *The sleep-wake cycle is affected by the normal aging process and as we age the amount of time spent during sleep at night can change.*
- Sleeping issues in Parkinson's disease commonly include:
 - *Waking frequently at night with difficulty getting back to sleep*
 - *Daytime sleepiness with increased need for napping during the day*
 - *Restless legs, leg movements or jerks*
 - *Vivid dreams or nightmares*
 - *Dream enactment; also known as rapid eye movement sleep behavior disorder (RBD)*

Sleep disturbance: REM sleep behavior disorder

- Rapid eye movement sleep behavior disorder (RBD): common in Parkinson's disease; defined as loss of paralysis that normally occurs during rapid eye movement sleep, allowing the person to "act out" his or her dreams which can be vivid, intense, or even violent.
 - *This disorder can even pre-date the typical symptoms of Parkinson's disease by many years*
 - *RBD can be disruptive to the sleep of a bed partner but can also potentially be harmful if movements cause injury to the person with Parkinson's*

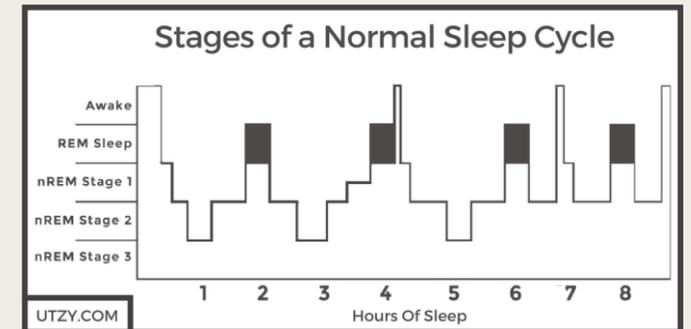


Sleep disturbance: REM sleep behavior disorder

■ Rapid eye movement sleep behavior disorder

– *Treatments*

- Lowering the bed, padded rails or padding the floor around the bed can be helpful in reducing risk of injury in RBD.
- Medications such as melatonin and clonazepam (Klonopin) can be used to treat this disorder.



Sleep disturbance

- Sleep may also be disrupted by symptoms related to Parkinson's
 - *Frequent nighttime urination*
 - *Stiffness, cramping or difficulties turning over at night*
 - *Wearing off of medications that control Parkinson's symptoms*
 - *Unrecognized or untreated depression and anxiety may also cause poor sleep*
- These above issues should be assessed first before starting a sleep aid medication
- Sleep apnea is also common and can cause poor sleep, daytime sleepiness and can be treated!

Sleep disturbance: Treatments



■ Proper “sleep hygiene”

- *Avoid sleeping too much during the day*
- *Have a regular bedtime and wake-up time every day*
- *Take activating medications (like selegiline) earlier in the day*
- *Decrease fluids prior to bed to reduce trips to the bathroom*
- *Avoid caffeine and alcohol - especially in the afternoon and evenings. Alcohol can make you sleepy but actually fragments sleep later in the night.*

Sleep disturbance: Treatments

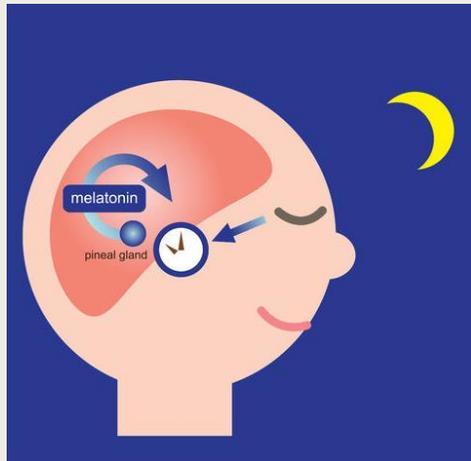


■ Proper “sleep hygiene”

- *Make sleep environment as restful as possible: quiet, dark, cool room*
 - No “screen-time” in bed or an hour prior to bed
- *Try soothing music and meditation to promote sleep. A warm bath prior to bed can help you relax*
- *Get regular exercise but exercising immediately before bedtime is stimulating- so exercise should be done earlier in the day*
- *If you lie awake for more than 30 minutes, get up and do something relaxing then re-try sleep later when you become tired*

Sleep disturbance: Treatments

- Use medications as a last resort; talk to your doctor but available treatments
 - *Melatonin (2-12 mg at bedtime) is a hormone that is secreted in the normal brain when it gets dark and can be purchased over the counter*
 - *Start by using 2 mg and can work up gradually to 12 mg.*



Non-Motor Symptoms

- Dizziness
- Sleep disturbance
- Drooling

Drooling

- Excessive pooling and poor control of saliva in the the mouth
 - *In PD, it is unclear if this is due to either “poor clearance” (swallowing dysfunction) or increased production of saliva*
 - *Head and mouth position may also play a part*
 - *Tends to be more prominent during “off” period*
- Can cause rash around the mouth, poor oral hygiene, bad breath, eating and speaking difficulty, increase rate of pneumonia due to aspiration
 - *In addition social embarrassment and emotional distress*

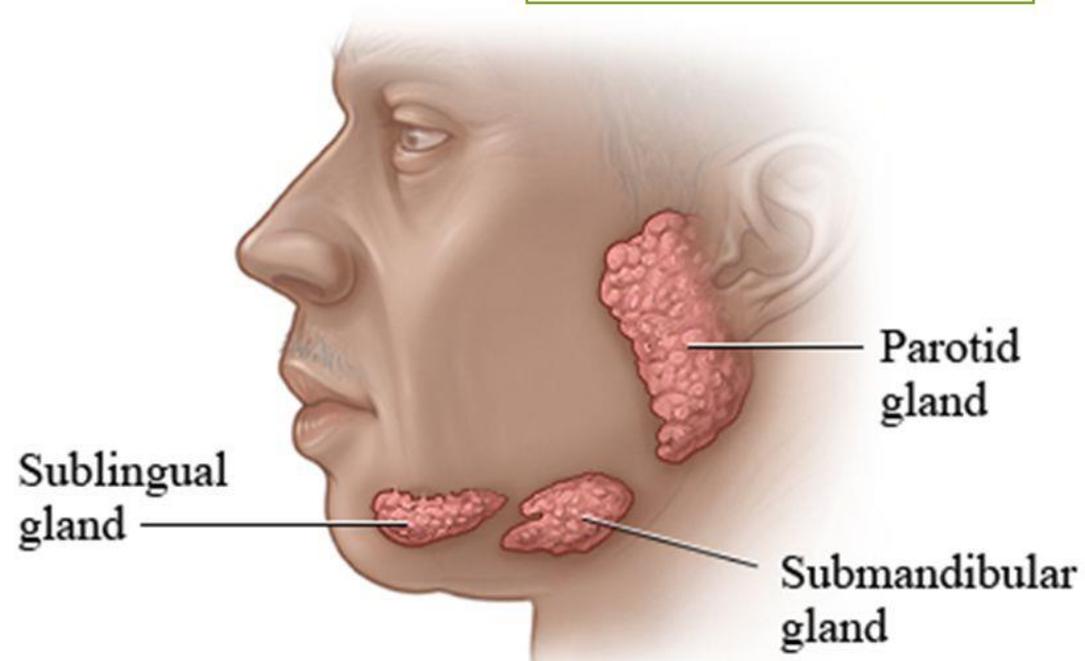
Drooling

- Symptoms can range from wetting of pillow at night to embarrassing excessive saliva in social situations
 - *Severe issues can be related to concerning swallowing issues that can lead to choking; needs assessment from speech language pathologist*
- Anywhere from 10-84% of PD patients
- Factors possibly associated with drooling:
 - *Severity of PD symptoms*
 - *Male gender*
 - *Older age*
 - *Presence of hallucinations*
 - *Duration of disease*

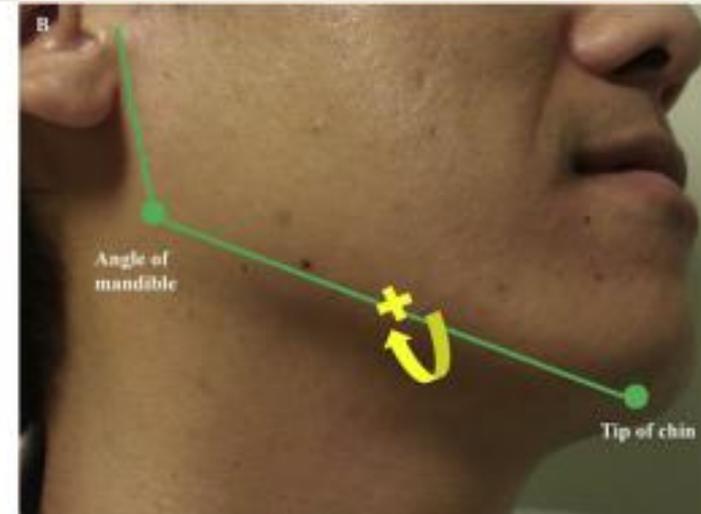
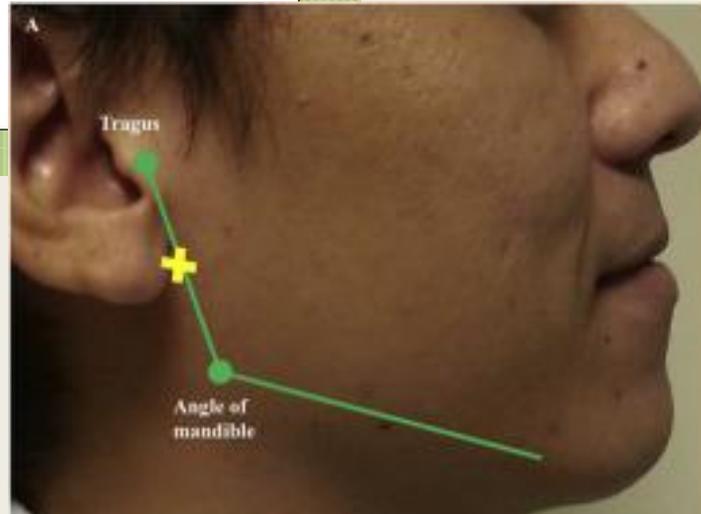
Drooling

■ Treatment

- *Stopping medications that can aggravate drooling: donepezil/galantamine and quetiapine are common*
- *Non-medication options*
 - Chewing gum; sucking hard candies
 - Behavioral modification
- *Medications*
 - Glycopyrrolate and atropine drops (possible side effects: confusion)
 - Clonidine (can lower blood pressure; less evidence)
 - Botulinum toxin injections



BoNT- sialorrhoea



(A) Parotid gland: Drawing the imaginary line starts from the tragus to angle of the mandible; then the mid-point of this line is the landmark for injecting botulinum neurotoxin into the gland. (B) Submandibular gland: Drawing the imaginary line, along with the length of body of the mandible, starts from angle of the mandible to tip of the chin; then one finger breadth medial to the mid-point of this line is the landmark for injecting botulinum neurotoxin into the glands.

Conclusions

- Dizziness in Parkinson's disease can be caused by low blood pressure that occurs when standing
 - *This can be detected and monitored with measuring sitting/standing blood pressure*
 - *Both non-medication and medication options are available*
- Sleep disturbances are common and different strategies can be used to improve sleep
- Drooling can be very bothersome and if problematic botulinum toxin injections are a good option