

Chief Complaint:

Progressively worsening tremors in the right hand

Demographics:

- **Age:** 67 years old
- **Sex:** Male
- **Occupation:** Retired teacher
- **Ethnicity:** Caucasian
- **Living Situation:** Lives with his wife in a suburban home
- **Smoking:** 0 pack per day
- **Alcohol Use:** Occasional consumption (1-2 drinks per week)
- **Physical Activity:** Primarily sedentary, enjoys walking but finds it difficult due to balance issues

Previous Medical History (PMHx):

- Hypertension (diagnosed 10 years ago)
- Hyperlipidemia
- Type 2 diabetes mellitus (diagnosed 5 years ago)
- No known history of stroke or seizures

Family History (FHx):

- Mother-deceased: Hypertension and Type 2 diabetes mellitus
- Father-deceased: Parkinson's disease and Coronary artery disease
- Children-all living: no known medical history

Previous Surgical History (PSHx):

- Cholecystectomy (gallbladder removal) 5 years ago
- No major surgeries

Allergies:

- No known drug allergies

History of Present Illness (HPI):

J.F., a 67 y/o Caucasian male, presents to the clinic with his wife. The patient's wife noticed that he started having a tremor in his right hand about 6 months ago, which has gradually worsened. His gait has become slower, he has difficulty initiating movement, and he often shuffles when walking. The tremor is more noticeable at rest. J.F. also complains about forgetting appointments

and details of conversations. There is no history of a sudden onset of these symptoms. He denies vision changes and headaches.

Differential Diagnoses

1. Parkinson's Disease (PD)

- **Pathophysiology:** Parkinson's disease is found to be a progressive neurodegenerative disorder caused by the death of dopaminergic neurons in the substantia nigra, leading to motor symptoms such as tremor, rigidity, bradykinesia, and postural instability (Armstrong & Okun, 2020).
- **Rationale:** The patient's presentation of rest tremor, bradykinesia, shuffling gait, and cognitive changes is classic of Parkinson's disease.

2. Essential Tremor

- **Pathophysiology:** An essential tremor has a couple of theories surrounding the etiology; most recently, scientists believe it results from abnormal activity in the cerebellum, inferior olive nuclei (ION), thalamus, red nucleus, and cerebral cortex. Essential tremors are characterized by bilateral tremors, particularly in the hands, with no other neurological symptoms associated (Kosmowska & Wardas, 2021).
- **Rationale:** The presence of tremors in the patient's right hand could initially suggest essential tremors, but it is usually bilateral and does not cause the additional motor and non-motor symptoms seen in PD.

3. Multiple System Atrophy (MSA)

- **Pathophysiology:** Multiple System Atrophy is a very rare, progressive neurodegenerative disease. The pathology is not widely understood; however, it is believed that within oligodendrocytes and neurons, there is an accumulation of misfolded α Syn. Symptoms present similarly to Parkinson's disease; however, beginning in early stages of the disease, it is associated with autonomic dysfunction (Jellinger, 2020).
- **Rationale:** MSA should be considered when there are autonomic symptoms (which are not prominent in this case).

Risk Factors:

Parkinson's Disease (PD)

- **Age:** Parkinson's disease typically affects individuals over 50 years old. Which increases his risk.
- **Gender:** Parkinson's disease is more common in men than in women.

- **Family History:** Having a first-degree relative with a diagnosis of Parkinson's disease increases one's risk for developing this neurodegenerative disease three-fold.

(Armstrong & Okun, 2020; Balestrino & Schapira, 2020)

Essential Tremor

- **Age:** Essential tremors can occur at any age; however, they are most found in those over 65 years.
- **Gender:** Essential tremor affects both men and women.
- **Medical History:** Family history is a significant contributor to developing an Essential Tremor, as up to 90% of cases have a familial tendency (Kosmowska & Wardas, 2021). According to the case study, there is no familial tendency.

Multiple System Atrophy (MSA)

- **Age:** MSA typically manifests in adults between the ages of 40 and 70. The patient, at 67 years old, falls into the latter portion of the typical age range for this disorder.
- **Family History:** MSA is usually sporadic, but a small percentage of cases are familial. There is no mention of family history in the case study, so the likelihood of this being a risk factor is minimal for this patient.

Comparison of Differential Diagnoses

- **Occurrence:**
 - Parkinson's disease
 - Parkinson's is one of the more common neurodegenerative diseases with a prevalence of 1-2% of the population (Balestrino & Schapira, 2020).
 - Essential tremor
 - Occurs most commonly throughout the general population, at a rate of 4- 5% of the population (Kosmowska & Wardas, 2021).
 - Multiple System Atrophy
 - This is far rarer, with a prevalence of 4 out of 100,000 people, and more likely to present with autonomic symptoms early on, distinguishing it from PD (Jellinger, 2020).
- **Pathophysiology:**