



# PALLIATIVE CARE CASE OF THE MONTH

## “Predicting Prognosis in Parkinson’s Disease”

by  
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**Case:** Mr. R is a 66 year-old gentleman with Parkinson’s disease diagnosed about one year ago. The neurology service evaluated Mr. R twice in the last year, and both times suggested starting levodopa. Due to agitation related to this medication, he and his family decided to stop it. When I met Mr. R, he was admitted to the hospital with aspiration pneumonia and decubiti of the sacrum and bilateral heels in the setting of two-week decline in functional status. The palliative care service was consulted to discuss goals of care after the primary team and family agreed on a plan for a time-limited trial of enteral feeding through a nasal-gastric tube along with intensive physical therapy and a re-trial of a dopamine agonist medication. This plan begged the questions: 1.) What is the effect of Parkinson’s medications on mortality versus alleviating symptom burden? 2.) What is the expected time frame to see benefit from medication treatment in Parkinson’s disease? and 3.) How should I prognosticate for Mr. R?

**Background:** Parkinson’s disease (PD) is a progressive neurodegenerative disorder with motor, neuropsychiatric and non-motor manifestations. Although the cardinal motor features of PD include tremor, rigidity and bradykinesia, patients may exhibit other motor features such as dysphagia and speech impairment. Additionally, patients can demonstrate cognitive dysfunction, sleep disturbances and mood disorders.

**Impact of PD treatment on symptoms and mortality:**

Although there are many pharmacologic and surgical treatments for symptom benefit in PD, none slow the course of the disease. Pharmacologic treatment of patients with PD is indicated when symptoms interfere with quality of life. Medications such as levodopa, dopamine agonist (DA), amantadine or a monoamine oxidase type B (MAO B) can be used for symptom relief of motor symptoms. Medication choice is determined by severity of disease and potential adverse drug effects <sup>1</sup>. The most common adverse effects of levodopa include dyskinesia, nausea and dizziness. Less commonly, levodopa can cause hallucinations, agitation and impulse control disorders. Most patients experience the benefit of pharmacologic treatment within hours-days depending on type of medication.

**Predicting Prognosis:** Progression of PD is variable, and there are no commonly used, validated models to predict

mortality. A recent study of mortality in PD showed the following variables predicted reduced survival <sup>2</sup>.

Variable	Hazard Ratio (95% Confidence Interval)
Reduced dopamine active transporter uptake in the caudate (measured via imaging studies)	0.81 (0.61-1.06)
Mild cognitive impairment (measured by Mini-Mental Status Exam score)	0.81 (1.04-3.14)
Hyposmia (defined by score < 4 on the Brief Smell Identification Test)	0.84 (0.75-0.93)
Older age at baseline	1.11 (1.07-1.16)
Postural imbalance (measured by Postural Imbalance and Gait Disorder score)	3.25 (1.75-6.05)
Leukocytosis in the cerebrospinal fluid at time of diagnosis	5.59 (2.67-11.71)

Atypical parkinsonian presentations such as multiple system atrophy (MSA) and progressive supranuclear palsy (PSP) were associated with a worsened survival (Standardized Mortality Ratio = 3.32 with 95% CI 2.21-4.80 compared with the general population). Interestingly, mortality in patients with PD and normal cognition at baseline was not significantly different from mortality in the general population. Assuming an age of 71.2 years at diagnosis, the expected survival in patients with PD and normal cognitive function was 11.6 years and the expected survival for patients with PD with mild cognitive impairment was 8.2 years. The most frequent cause of death among all types of PD was pneumonia (19.5% of deaths in typical PD, 25% of deaths in MSA and 43.8% of deaths in PSP) <sup>2</sup>.

**Resolution of the case:** Mr. R was restarted on levodopa which he tolerated well. We discussed prognosis with the patient and family (likely weeks-months based on dysphagia and functional status) and agreed not to escalate medical interventions while undergoing this time-limited trial. He was discharged to a long-term acute care facility with a POLST indicating these values.

**References:**

1. Verschuur CVM et al. Randomized Delayed-Start Trial of Levodopa in Parkinson's Disease. N Engl J Med. 2019 Jan 24;380(4):315-324. doi: 10.1056/NEJMoa1809983.
2. Backstrom D et al. Early predictors of mortality in parkinsonism and Parkinson disease. A population-based study. Neurology. 2018; 91(22): 204

*Personal details in the case published have been altered to protect patient privacy.*

For palliative care consultations please contact the Supportive and Palliative Care programs at PUH/MUH, 412-647-7243, pager # 8511, Shadyside, 412-647-7243, pager # 8513, Perioperative/ Trauma Pain, 412-647-7243, pager # 7246, UPCI Cancer Pain Service, pager 412-644-1724, Magee Women’s Hospital, pager 412-647-7243 pager # 8510, VA Palliative Care Program, 412-688-6178, pager # 296. Hillman Outpatient: 412-692-4724. For ethics consultations at UPMC Presbyterian-Montefiore and Children’s pager 412-456-1518  
With comments about “Case of the Month” call Dr. Robert Arnold at (412) 692-4834.