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The Missing Piece? How PM&R Could Have Assisted in Rapid Functional Decline

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INTRODUCTION

Progressive supranuclear palsy (PSP) is a rare neurodegenerative tauopathy that primarily affects movement, balance, and cognition.[1] PSP is often misdiagnosed as Parkinson's disease due to overlapping symptoms. Defining characteristics of PSP include supranuclear ophthalmoparesis, dysphagia, frontal cognitive abnormalities, and axial rigidity with retrocolic posture - which contrasts the flexed posture associated in Parkinson's disease.[2]

PSP is considered uncommon, with an estimated prevalence of 5 to 6 cases per 100,000 people, and a mean age of onset of approximately 65 years.[1] Despite its rarity, PSP is a critical condition to recognize due to its debilitating effects and frequent misdiagnosis as Parkinson's or other movement disorders. Despite its impact, standardized rehabilitation protocols are limited. This case report highlights the potential role of PM&R in addressing current gaps in care.

PATHOPHYSIOLOGY

- Tau Protein Accumulation
  - Abnormal tau aggregates form neurofibrillary tangles, leading to neuronal dysfunction and death[3]
- Selective Brain Degeneration
  - Midbrain Atrophy leads to vertical gaze palsy and postural instability
  - Degeneration of the frontal lobe contributes to executive dysfunction and apathy
  - Balance, coordination, and motor function are affected by globus pallidus, subthalamic nucleus, and dentate nucleus involvement
- Neurotransmitter Imbalance
  - Presence of Parkinsonism features due to dopaminergic dysfunction
  - Cholinergic and serotonergic deficits contribute to cognitive and behavioral symptoms

CASE DESCRIPTION

An 86-year-old male, previously functioning independently, was evaluated in the emergency department following a ground-level fall. Initial workup was largely unremarkable aside from mild microvascular changes on CT Head. He declined admission, but returned eight days later with worsening mobility and cognitive slowing. Given history of hypertension, coronary artery disease, prostate cancer in remission, and depression, as well as medication regimen - including Abilify, Wellbutrin, Celexa, Galantamine, and Metoprolol - concerns for polypharmacy were considered. Medical workup revealed a urinary tract infection, treated with Rocephin, and severe constipation with stercoral colitis requiring manual disimpaction and aggressive laxation. Physical and occupation therapy (PT/OT) assessments noted posterior lean, rigidity, tremors, and poor safety awareness. Neurology evaluation revealed cogwheel rigidity, increased tone, and limited upgaze, raising concern for parkinsonism. MRI revealed chronic microvascular changes and ventriculomegaly consistent with hydrocephalus ex vacuo. Differentials included PSP versus Lewy Body Dementia, leading to a trial of Sinemet. The patient was recommended for skilled nursing facility (SNF) placement; however, the family opted for home-based 24-hour care instead.

IMAGING

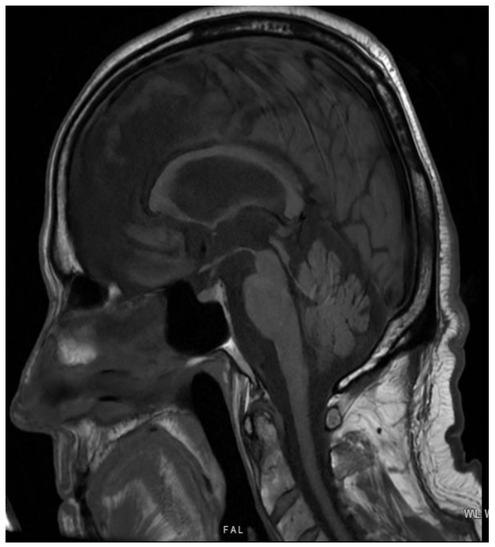

Figure 1. Sagittal MRI Brain with Hummingbird Sign

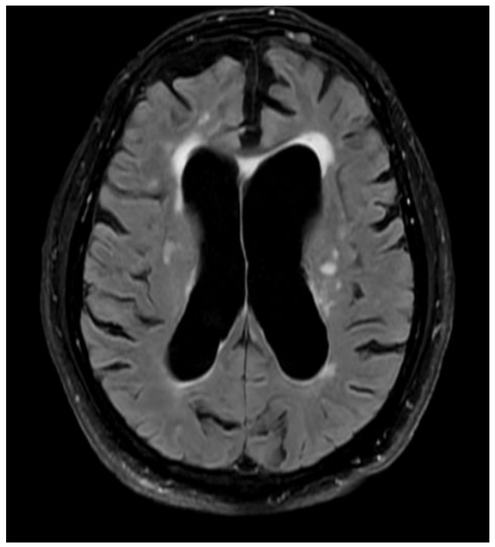

Figure 2. Axial MRI Brain, Ventriculomegaly

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DISCUSSION

PSP is a rare neurodegenerative disease that is challenging to clinically diagnose and manage. Physiatry can play a complementary role in functional assessment and long-term rehabilitation planning.[4] Actionable interventions PM&R specialists contribute in similar cases:

- Comprehensive Functional Assessment
  - Evaluate strength and coordination deficits impacting ADLs [4, 5]
  - Determine dysphagia screening needs
  - Coordinate interdisciplinary care with PT/OT and Speech Therapy
- Bowel and Bladder Management
  - Neurogenic vs. Functional Incontinence
  - Develop structured bowel regimen to prevent recurrent stercoral colitis
  - Assess urinary retention, trial scheduled voiding, intermittent catheterization, or medication interventions.
- Medication Adjustment
  - Assess if polypharmacy contributed to symptoms
  - Monitor response to Levodopa/Carbidopa
  - Screen for orthostatic hypotension
- Patient and Family Education
  - Present functional expectations for PSP

CONCLUSION

This case demonstrates the importance of multidisciplinary collaboration in evaluating functional decline in elderly patients.[2] While medical management addressed symptomatic control, PM&R could have played a vital role in slowing functional decline and enhancing mobility.[4,5] As many hospitals lack inpatient PM&R services, increasing access through inpatient consultation models or structured outpatient follow-up may improve long-term outcomes for patients with complex rehabilitation needs. Future studies should explore the impact of proactive PM&R involvement on functional outcomes in PSP and other rapidly progressive neurodegenerative diseases.