

Chosen Impairment and Population: Fatigue in Parkinson's Disease

When assessing patients with Parkinson's Disease, it is likely that our initial considerations will pertain to patients' motor symptoms that result in movement dysfunction and impair their capacity for ambulation and performing activities of daily living. However, these individuals also frequently experience a number of nonmotor symptoms that further the negative impact on their quality of life. An example of this is fatigue, which is highly prevalent in this population, though not nearly as well understood in these individuals as other motor or nonmotor symptoms.

Some studies indicate a prevalence of fatigue in patients with Parkinson's that ranges from 33% to as much as 58%,¹ while others assert that it is a major issue for half of Parkinson's patients.^{2,3} Given such widespread presence in combination with reports that one third of these patients find it to be the most disabling aspect of the disease,^{2,3} it is therefore worthwhile to work to address. However, the lack of knowledge regarding the pathophysiology of this fatigue and the reasons why it occurs so frequently in these individuals poses a challenge. This gap in knowledge contributes to the variation in prevalence noted above, as fatigue has been defined and measured in different ways over the years. Regardless, it is important to note that fatigue in these patients is typically reported from the very onset of the disease, and often continues to worsen with disease progression.¹

Current research suggests that potential causes of fatigue include association with depression and sleep disorders,^{1,2,3} and that it does not seem to be related to motor symptoms, as it is often present before motor deficits have yet progressed significantly.^{1,3} It has also been hypothesized that dysfunction of circuits between the basal ganglia and medial frontal areas is a contributor to fatigue, which may be corroborated by other neuroimaging studies that suggest

CNS associations such as impaired serotonin release or poor perfusion of the prefrontal region.^{1,2}

Data demonstrating a lack of association between motor symptoms and fatigue further support the idea that this fatigue is more related to dysfunction in non-dopaminergic pathways.³ Still others that examine non-CNS causes emphasize the role of changes in these patients' metabolisms and endocrine systems as contributors to increased fatigue.¹ However, the majority of the evidence at this point in time seems to point to serotonergic causes of fatigue in these patients.

It is important to examine the ways in which this fatigue manifests in patients and to specify a definition as best as possible, to differentiate it from other kinds of tiredness or sleepiness. It is also important to recognize that fatigue in Parkinson's patients will often be concomitant with other non-motor symptoms, such as depression or daytime drowsiness due to impaired sleep. With this in mind, a working definition is that these patients feel a lack of energy and that more effort is needed to perform daily tasks, but that apathy is not contributing, nor would a nap be helpful.² This is incredibly relevant for interventions for fatigue, as treatment will therefore be different from medications used to address comorbidities like depression that may also have associated tiredness.² It is also necessary to distinguish it from normal fatigue, which presents in healthy individuals as a reaction to extended or high-intensity activity, but will improve with rest in ways that do not impair ADL performance.²

Given this information, keeping in mind the ways in which fatigue will affect Parkinson's patients during physical therapy sessions will be key in goal setting and planning interventions. The first consideration for me as a therapist would be how far the patient's disease has progressed, as it has been documented that the severity of their fatigue will worsen with time.³ Individualized goals would then be established based on my knowledge of their diagnosis history

and my subjective questioning regarding fatigue levels and how this has changed since disease onset. With this in mind, I would expect that for these patients, therapy goals will have a more qualitative emphasis: They may be based more upon patient report of energy levels, the ADLs or chores that a patient is able to complete in a single day, or perhaps improved ability to break tasks up into manageable chunks in order to accomplish more of their daily responsibilities. While these tasks could certainly be quantified, or energy levels could be assigned numbers, these do have an inherently subjective component as well. I can see that in this case, it may become important to document these changes in great detail to help ensure continued insurance coverage for sessions.

One of the best ways to ensure continued insurance coverage and reimbursement would be to make use of appropriate outcome measures. The most specific outcome measure relevant to these patients will be the Parkinson's Fatigue Scale (PFS-16), which consists of 16 statements about fatigue that patients must rate on a scale ranging from Strongly Agree to Strongly Disagree.⁴ It takes only a few minutes to administer, and studies have demonstrated greater reliability with this one than other similar outcome measures such as the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F) scale.⁴ Although the questions in the PFS-16 are designed to address fatigue in ways that exclude cognitive and emotional components,⁴ I would also consider checking for a history of depression, and using outcome measures to assess cognitive performance and sleep hygiene to aid in clear differentiation. The use of the MMSE and the Parkinson's Disease Sleep Scale have been shown to be useful in associating fatigue with cognition and sleep disturbances in these patients.³

With a method of fatigue measurement established, what interventions could be leveraged to help these patients improve along this scale? At this time, it seems the best solution

is the use of energy conservation with the integration of graded exercise. It is important to recognize that there is a general lack of strong evidence to support this intervention, as acknowledged by the 2018 systematic review and meta-analysis that has been referenced throughout.³ Another 2019 review of the treatment of non-motor symptoms in Parkinson's asserts the same - their evidence search found very little in the way of nonpharmacologic interventions for fatigue.⁵ However, despite this admission, the very same systematic review suggests that the combination of energy conservation and graded exercise remains these patients' best bet in terms of non-pharmacologic options for managing their fatigue.³ This is further supported by Herlofson and Kluger, who assert that the use of energy conservation strategies will aid patients to become more self-sufficient in coping with their fatigue, improving their capacity for activity, and reducing fatigue over time.¹ Because this approach has not been strongly supported in literature, a clear mechanism for its efficacy has not yet been established - it must be noted here that the evidence currently supporting energy management is primarily based upon authors' clinical experiences.^{1,3} But is evidence-based physical therapy practice not the intersection of best evidence and clinical expertise?

Beyond my ability to intervene through physical therapy, these patients may see greater improvement in their fatigue levels when combined with appropriate pharmacological intervention. This, of course, will call for discussion with and referral back to the patient's PCP or neurologist. Current literature suggests that administration of Monoamine oxidase B (MAO-B) inhibitors have good potential for treating fatigue and is safe for use without intensive monitoring. However, it is important to recognize that the sample in this case was small.⁵ A different review also touches on the possible efficacy of the MAO-B inhibitor known as rasagiline. This article addresses several other drugs as well, such as Levodopa, dopamine

agonists, and stimulants, but ultimately concludes that none of these are sufficiently supported to warrant a recommendation for use to treat fatigue.¹ Personally, I find it interesting that the MAO-B inhibitors are the ones considered to have the most potential, given that these drugs function by inhibiting dopamine breakdown, hence allowing dopamine to accumulate.⁶ While it does make sense to me that this would improve symptoms of Parkinson's, I feel that it contradicts the hypothesis discussed above that fatigue in these patients may be serotonergic in nature. However, this further supports the need for me to refer this patient back to a PCP or neurologist who would be more deeply familiar with these mechanisms.

With all this information in mind, I now have a clearer idea of how to approach treatment for patients with Parkinson's who report struggling with fatigue. In the subjective portion of the initial examination, it will be important to ask questions that aid in differentiating fatigue from other kinds of tiredness and characterizing its frequency, severity, and how it has progressed over time. In the objective section, I can use the PFS-16 to place a numerical value on fatigue, which will allow us to track their progress as well as justify the need for therapy for insurance and reimbursement purposes. In establishing a plan of care for these patients, it will be important for us to work together to set realistic goals that address fatigue quantitatively but also culminate in functional results that allow the patient to participate more effectively in ADLs, social life, the community, and recreation. Implementing exercise interventions will call for gradually graded exercise, in which I can anticipate a slower progression over time than I might expect with other patients. Finally, it will be very important for me to perform patient education regarding energy conservation techniques - this will require me to set realistic expectations for the patient and communicate that it may not be possible to continue performing their activities in the same way that they have always done. For example, the patient might need to modify chores around the

Kathryn Lambert

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house to be performed in sitting, such as sitting down while folding laundry, or getting a tall stool to allow for sitting during cooking and meal prep. I would also recommend to my patients that they plan their activities for the day ahead of time - whether they consist of chores, socializing, or recreation, spreading these things out during the day to allow for rest in between may make it easier to participate in multiple activities in a single day. It will also be important for them to recognize their own daily patterns of fatigue, and to plan to complete their highest priority and/or highest energy tasks when they anticipate having the most energy. The last recommendation is one that may be the most difficult for patients to hear: It is okay to ask for help. I want to emphasize that their care and progress is going to be a team effort between their healthcare providers, themselves, and any family available for support. Strengthening the concept of this bond will likely contribute to better outcomes over time.

References

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