

Concerns with driving for individuals with Parkinson's Disease

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Parkinson's Disease (PD) is a debilitating condition that affects motor as well as cognitive functioning. Recently, driving safety in individuals with PD has become a concern. Some individuals with PD suffer from memory problems, sleep disturbances, and medication side effects that can influence driving ability. In addition to the symptoms of the disease itself, recent evidence suggests that some medications that treat PD may increase the risk of motor vehicle crashes (MVA). This paper discusses the recent evidence concerning driving safety among PD individuals and provides a patient handout template on this topic.

In recent years, there has been increasing awareness of certain Parkinson's disease (PD) symptoms and antiparkinsonian medication effects that may impair driving ability. Parkinson's disease is a movement disorder characterized by tremor, slowed movement, stiffness, and difficulty with balance, all of which can affect driving. There may also be cognitive deficits in PD that impair the ability to drive safely. These include concentration difficulties, slower reaction times, problems with visual perception, and longer decision-making times.¹ In addition, some individuals with PD suffer sleep disorders such as insomnia, REM sleep disorder, vivid dreams, and periodic nocturnal movements, all of which can diminish restorative sleep. These sleep disorders can cause increased daytime somnolence and susceptibility to motor vehicle crashes (MVCs).² Finally, all dopaminergic medications may have insomnia, daytime sleepiness, and sudden sleep attacks as side effects.

As concern rises about driving safety among PD individuals, it will become increasingly important to identify those individuals who are at particularly high risk of MVC. Whether it is the physical or cognitive symptoms of PD itself, or side effects of dopaminergic medications, some individuals may be deemed unsafe to drive, while others may be advised to take precautions when driving. Patient awareness and education on this subject may be useful. It may help ease the feeling of loss of independence for individuals who are told not to drive. It may also provide a potential tool for self-identifying risk fac-

tors for unsafe driving. The following provides a sample patient recommendation sheet regarding PD and driving, and a summary of the evidence used in its construction.

Discussion of the Evidence

Most PD individuals are safe drivers.³ A small number of drivers, however, may be unaware of their risk for unsafe driving as a result of PD symptoms or treatment. Whether PD individuals are actually involved in more MVCs than non-PD drivers is unclear. There appear to be mixed conclusions from a number of studies that have looked at the safety of driving in PD individuals. Overall, the number of PD-related MVCs is low, making it difficult to assess driving risks in these individuals. Some studies have looked specifically at medications and the associated sleep events, while others have investigated cognitive changes in PD.^{3,4,5,6} Driving simulators and on-road driving tests have been used to investigate risks of MVCs in PD individuals, and the development of screening tools for unsafe driving has been attempted.^{3,7,8} Despite the lack of large, multicenter studies, it is clear from these small studies that various factors of PD and its treatment may put individuals who drive at risk for MVCs.

Cognition

Some PD individuals have restricted their own driving, citing concentration difficulties and increased stiffness as the most common reasons.⁸ However, it

has been shown that drivers themselves are not good predictors of their own driving ability.⁷ Neurologists also appear to be poor predictors of driving ability.⁷ Thus, attempts have been made to determine ways for physicians to better assess the risk of MVC. The motor symptoms, if severe enough to impair driving, may be recognized by the patient and neurologist. However, the cognitive and sleep-associated symptoms may be more difficult to identify and assess. Cognitive deficits in non-demented PD individuals include visuospatial disturbances, memory problems, and executive dysfunction.¹ Specifically, the cognitive symptoms that are believed to play a role in impaired driving are concentration difficulties, slower reaction times, problems with visual perception, decision-making difficulties, and difficulty carrying out simultaneous tasks.³ PD individuals may also suffer from dementia. In one study that found an increased incidence of MVCs in PD individuals, those involved in accidents had lower MMSE scores.⁸

Sleep

Sleep disturbances in PD individuals may occur regardless of medication. As PD symptoms re-emerge at night, nocturnal insomnia and sleep fragmentation lead to increased daytime sleepiness. One community-based study found that sleep disturbances were twice as common in PD individuals as in aged-matched controls.²

Medications

All dopaminergic medications have insomnia and daytime sleepiness as side effects, including pramipexole, ropinirole, cabergolide, pergolide, bromocriptine, and L-Dopa.⁹ Although sudden sleep attacks were first identified as a side effect of pramipexole and ropinirole, all dopaminergic drugs are now implicated.^{4,6} General estimates suggest that up to 30% of individuals taking dopamine agonists for PD have sleep attacks.⁶ Determining which individual medications are the most likely to cause sleep attacks has not been established to date. There is some controversy over whether 'sleep attacks' actually exist, as some suggest that sleep is always preceded by warning signs that simply need to be recognized.^{5,10} Long acting agonists and slow-release

preparations may improve sleep quality and therefore reduce daytime symptoms.

In general, dopaminergic agents significantly reduce motor symptoms, making individuals better fit for driving. Thus, in many people, the positive benefits seem to outweigh the negative side effects such as cognitive impairment and motor complications.

Assessment

One study that used driving simulators showed that when driving in urban areas, during traffic, and turning across traffic, PD individuals made more errors than non-PD individuals, and those with more severe disease were more likely to have a simulator collision.⁸ Another study found an increase in MVCs per million miles driven with increasing disability, while other reports have found no difference in the rate of MVCs between PD individuals and aged-matched controls.¹⁰ Others have reported that there are more accidents per kilometer driven in PD individuals, but less overall, probably because PD individuals limit themselves to the amount they drive. These findings should be supported with further data. Finally, clinical tests do not appear to correlate well with ability to drive.⁷ Therefore, the best way to assess driving ability is through an on-road driving test itself.⁷

Recently, it has been suggested that physicians attempt to identify individuals at risk for sleep attacks with a combined Epworth Sleepiness Scale and Inappropriate Sleep Composite Score.^{2,5} For those individuals who drive and are found to be at risk, precautions should be used when prescribing certain medications. Currently, the stage of PD, dose of medication, recent change in dose or type of medication, duration of treatment, age, and prior episodes of falling asleep can be considered risk factors for sleep events and unsafe driving.

Conclusions

There are a number of factors that influence the driving safety of PD individuals. These include motor and cognitive symptoms, and sleep events related or unrelated to PD medications. It is clear that PD individuals can have increased daytime sleepiness, irrespective of medication.⁵ Estimates suggest that 15-32% of PD individuals show signs of excessive

daytime sleepiness, which is double that of aged-matched controls.^{5,9} In addition, those individuals on dopaminergic medication are at increased risk for sudden sleep attacks. Despite these findings, general accident rates are low and severe accidents in association with dopaminergic medications are rare. There appears to be a need for a multicentre, controlled trial study involving many PD individuals and aged-matched controls to further assess the risks associated with driving. This might include com-

parisons between the different PD medications and determining whether there are tools that neurologists and geriatricians can use to predict unsafe driving. However, at the current time, recommendations for driving, aside from education regarding the potential risks, should be made with caution until further information is available. The following is an example of a patient handout or recommendation sheet that may be helpful in educating the patient and his family about the risks PD and driving.

Parkinson's Disease and Driving

Many people with Parkinson's Disease are active and safe drivers. Others decide to give up driving for their own reasons. There are no laws that ban individuals with Parkinson's Disease from driving and not every patient has the symptoms or the degree of disease severity that may impair driving safety. However, some aspects of the disease can affect the ability to drive safely and should be discussed with your doctor.

Sometimes drivers may not be aware that the symptoms of Parkinson's Disease are affecting their driving. Have you (or your partner, family members, caregivers) noticed any of the symptoms below that might be affecting your driving?

Side effects of some PD medications:

- Sudden onset of sleep with or without warning signs
- Vivid dreams and hallucinations at night
- Excessive daytime sleepiness
- Insomnia

Sleep symptoms (regardless of medication):

- Excessive daytime sleepiness
- Insomnia

Motor symptoms:

- Slowed movement
- Rigidity or stiffness (especially in neck, shoulders, and legs)
- Involuntary movements
- Severe tremor/shaking

Cognitive symptoms:

- Difficulty concentrating
- Decreased reaction times
- Problems with visual perception
- Decision-making difficulties
- Difficulty carrying out simultaneous tasks

Recommendations:

If you have any of the above symptoms and are driving, bring it to the attention of your doctor. They may have the following suggestions:

- Do not attempt driving when tired and learn to recognize the signs of sleepiness.
- Do not drive in heavy traffic or late at night.
- Adjust your PD medication to the lowest possible dose that controls your motor symptoms satisfactorily. This may reduce the risk of the sleep-associated side effects.
- An on-road driving test is the best way to assess your skills and safety as a driver. Discuss with your doctor where to get a driving assessment in your community.

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Depression: Lessons learned about the patient-physician relationship

Kelsey Cameron

“Character cannot be developed in ease and quiet. Only through the experience of trial and suffering can the soul be strengthened, ambition inspired, and success achieved.” – Helen Keller.

I would have rather had my family doctor punch me in the stomach. Thirteen years of karate training would have prepared me for that. Nothing could have prepared me for him saying,

“Kelsey, you're suffering from a major depressive episode. Your health is the number one priority, and I don't know if you getting better is compatible with finishing your second year of medical school.”

Those words just hung in the air.

I didn't understand what he was talking about. I was only in his office to get a note to defer writing an exam. I knew that if I could just

postpone writing this exam, then I'd be okay.

...Unfortunately, putting off dealing with things had become my coping strategy. I just kept pushing through life because I thought others were depending on me. My plan was to address my exhaustion and feeling overwhelmed once I knew everyone else was okay. But before one situation completely resolved, something else came up, so I never took time to care for me...

There I sat in my doctor's office. He hadn't just knocked the air from my lungs he had completely taken the wind from my sails.

That evening, I allowed myself to say aloud