

SLEEP MEDICINE PEARLS

## A patient with nocturnal visual hallucinations

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A 69-year-old man with Parkinson disease (PD) for 11 years presented with nocturnal visual hallucinations (VHs). His symptoms started 10 months ago, when the hallucinations occurred only at night while he was awake. He reported seeing images of ravens and of people wearing colorful clothes. There was no auditory or tactile component and the images were stationary. The VHs were stereotyped in nature, lasted for a few minutes, and disappeared upon turning on the lights. Over the past few months, the hallucinations started to occur during the daytime but were still more pronounced at night. Although the patient had insight into the nature of hallucinations, these were becoming frequent (2 or 3 times per week), bothersome, and were interfering with his ability to sleep at night. For PD, he was currently on carbidopa/levodopa (25/250 mg

5 times a day, carbidopa/levodopa CR (50/200 mg) at bedtime, entacapone 200 mg 5 times a day, ropinirole 2 mg 5 times a day, and rasagiline 1 mg daily. Due to worsening motor symptoms, the dosage and number of dopaminergic medications had been gradually increased over the past 5–6 years. On neurologic examination, he had hypomimia, hypophonia, left hand resting tremor, bradykinesia, dyskinesias, and festinating gait. The patient denied symptoms suggestive of sleep apnea or rapid eye movement sleep behavior disorder. A polysomnography was not obtained.

**QUESTION: What is the cause of this patient's nocturnal VHs?**

**ANSWER: Complex nocturnal visual hallucinations in PD.****DISCUSSION**

Sleep-related hallucinations are a type of parasomnia and include hypnagogic, hypnopompic, and complex nocturnal visual hallucinations (CNVH). CNVHs are vivid, detailed, complex, relatively stereotyped, colorful images of animals and people that occur after a sudden awakening from sleep and usually disappear when illumination is increased.<sup>1</sup> They can occur in PD, dementia with Lewy bodies, Charles Bonnet syndrome (associated with reduced vision), medications (lipophilic beta blockers and dopaminergic agents), and peduncular hallucinosis (pons, midbrain, or thalamic lesions). Given the striking similarity in the hallucination symptoms despite varied anatomical sites of pathology (eg, visual pathway in Charles Bonnet syndrome, brain stem in PD, thalamus in peduncular hallucinosis), it has been proposed that CNVHs may represent a final common pathway by the way of a cortical release phenomenon.<sup>2</sup>

VHs are seen in up to 40% patients with PD and may occur as part of the disease itself or from treatment with dopaminergic agents. The phenomenology ranges from minor hallucinations, such as “presence” (someone in the room) or “passage” (person or animal passing in the peripheral vision), to formed visual hallucinations of persons, animals, or objects (including CNVHs).<sup>3</sup> Insight regarding the hallucinatory nature of symptoms is usually preserved. Hallucinations are more common in the evening and at night but can occur at any time. Longer duration of PD, cognitive impairment, and symptoms of daytime sleepiness are independent predictors for the presence of VHs.<sup>4</sup> A narcolepsy-like phenotype has been described in PD and rapid eye movement sleep intrusions into wakefulness has been suggested as a possible mechanism for the development of VHs.<sup>5</sup>

Minor hallucinations are typically not troublesome and may only need reassurance.<sup>3</sup> If hallucinations are bothersome, lowering dopaminergic therapy may help, but sometimes at the cost of worsening motor symptoms. Atypical antipsychotic medications such as quetiapine or clozapine may be used if the dopaminergic agents cannot be lowered or if bothersome symptoms persist despite the medication adjustment. Pimavanserin, a serotonin 2A (5-HT<sub>2A</sub>) receptor inverse agonist, is a new agent that does not worsen Parkinsonism and is approved for psychosis in PD.<sup>6</sup>

Our patient had bothersome VHs. Ropinirole (a dopamine agonist) and rasagiline (a monoamine oxidase-B inhibitor) were discontinued to reduce the total dopaminergic therapy. The patient had a significant reduction in frequency of VHs and improvement in his sleep upon discontinuing these medications.

**SLEEP MEDICINE PEARLS**

1. CNVHs are a type of sleep related hallucinations which may occur in PD, dementia with Lewy bodies, Charles Bonnet syndrome, and medications such as beta blockers.
2. Sleep clinicians must be familiar with the symptomatology of CNVHs for identifying the underlying etiology.
3. VHs in PD can be minor (presence or passage hallucinations) or can be more complex and formed.
4. VHs that are not troublesome do not need to be treated. If they are bothersome, dopaminergic medications can be reduced or antipsychotic agents may be used in select patients.

**CITATION**

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The author has seen and approved the manuscript. The author reports no conflicts of interest.