



Vivid Hallucinations in an Octogenarian

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An 80-year-old right-handed male with history of hypertension, mild peripheral neuropathy, moderate macular degeneration, and a history of migraine headaches in the past presents with new nocturnal visual images intermittently for the last year. He mentioned that he would wake up from sleep in the middle of the night and immediately see some colorful butterflies, multi-colored parrots, and occasional animals, mostly stationary but some in motion in his bedroom. These images would last for a few minutes, but once he turned on the bed lamp, all these animals would vanish instantly. He denies any other sleep related complaints. Although he has taken frequent naps in the daytime recently, but he blames it on his being bored.

On physical examination, his blood pressure was 136/80, pulse was 80/min, and respiratory rate was 18/min; BMI was 27. His neck circumference was 16 inches, and his Mallampati score was 3/4. The rest of his examination was unremarkable except for mild neuropathy. His EPSS (Epworth Sleepiness Scale Score) was 10.

His routine blood work and an MRI of the brain initiated by his primary doctor were within normal limits. His overnight polysomnogram with a 16-channel EEG showed normal sleep onset with a sleep efficiency of 66%, with multiple awaken-

ings causing fragmentation of sleep. During one such awakening he complained of seeing the dog and wanted the lights to be turned on. The EEG during that time showed alpha rhythm in the background and no ictal discharges. His sleep architecture showed stage N1 25%, stage N2 60%, stage N3 5%, and stage REM 10%. His AHI was 56; lowest saturation was 84% with a respiratory event. There was no other evidence of parasomnias or any REM related atonia. There was no evidence of any epileptic focus noted in the EEG leads of the polysomnogram. After 3.5 h of baseline polysomnography, PAP titration with CPAP was initiated; at 10 cm H₂O with humidification, all the respiratory events with arousal were eliminated.

QUESTION:

Which of the following is the most likely diagnosis for the patient's nocturnal imagery?

1. Peduncular hallucinosis
2. Complex nocturnal visual hallucinations
3. Lewy Body disease
4. Nocturnal seizures
5. Complex migraines

ANSWER: 2. Complex nocturnal visual hallucinations

The patient's nocturnal symptoms are consistent with complex nocturnal visual hallucinations (CNVH). Patients suffering from CNVH awaken from sleep at night and see vivid hallucinations for few minutes, but these hallucinations resolve instantly in bright light. These symptoms are not associated with any sleep paralysis. This patient had multiple awakenings from sleep at night because of the untreated sleep disordered breathing. These multiple awakening along with the deafferentation of visual pathways from macular degeneration (as is reported in Charles Bonnet Syndrome) may have resulted in the CNVH. Treatment of the undiagnosed sleep disordered breathing with PAP therapy resolved the multiple fragmentations of the sleep and eventually stopped the hallucinations.

Complex visual nocturnal hallucinations are thought to be a "positive release phenomenon" from occipital lobes.³ Some authors hypothesize that the combination of the deafferentation of the visual pathways in presence of ambient light and the "thalamic gated theory of passive sleep" may result in the "positive occipital release phenomenon."¹

This patient's history and examination was not consistent with parkinsonism to suggest Lewy Body dementia (LBD). Patients with LBD have vivid hallucinations, which are present throughout day and night with some predilection to more evening occurrences.² Our patient's nocturnal symptoms occurred only during awakening from sleep for few minutes and resolved when the room lights were turned on.

There was no stereotypy or amnesia of these events to suggest seizure events. Patients suffering from complex visual nocturnal hallucinations from an epileptic focus experience generally brief, repetitive, stereotypical images that are not distinct and as clear as seen by most patients suffering from CNVH.²

These visual symptoms were not preceded or followed by any headaches to suggest migraines. The visual symptoms as-

sociated with complex migraines are mostly simple hallucination rather than the complex, detailed, and vivid hallucination seen in NCVH.² Brainstem strokes can result in peduncular hallucinosis (PH). However, the visual symptoms in PH are not present only during sleep and tend to occur more in the evening. PH does not resolve when the room lights are turned on and is rarely polymodal. PH can appear in any part of the visual field.²

REFERENCES

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CITATION

Ganguly G. Vivid hallucinations in an octogenarian. *J Clin Sleep Med* 2012;8(4):461-462.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication April, 2012

Submitted in final revised form May, 2012

Accepted for publication May, 2012

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DISCLOSURE STATEMENT

Dr. Ganguly is a neurologist who joined private practice group of Neurology Consultants Medical Group, a group practice comprising 4 other neurologists. There is no conflict of interest in the preparation of this manuscript. Neither the Neurology Consultants Medical Group nor its partners have any intellectual or financial proprieties in the making of the manuscripts. Dr. Ganguly is affiliated to the USC-KECK school of medicine as Clinical Assistant Professor of Neurology. There are no contractual obligations between USC-KECK School of medicine and Dr. Ganguly except for clinical assignments for overseeing residents in outpatient departments three to four times a year. Again there is no conflict of interest.