PSYCHOGERIATRICS
The Official Journal of the Japanese Psychogeriatric Society
doi:10.1111/psyg.12448 PSYCHOGERIATRICS 2019

PSYCHOGERIATRIC NOTE

Bright light therapy improved sleep disturbances in a patient with dementia with Lewy bodies

Dementia with Lewy bodies (DLB) is the second most common type of degenerative dementia in patients aged 65 years and older.[1] However, many are often misdiagnosed, leading to less than ideal management. As such, most efforts concentrate on improving symptoms. In particular, sleep disturbances, including rapid eye movement sleep behaviour disorder, and abnormal daytime sleepiness characterize DLB.[2,3] Despite this, no treatments currently exist to address these disabling symptoms.[1] Psychiatric drugs and sleeping pills are not sufficient, and non-drug treatment methods are required. The efficacy of bright light therapy (BLT), which is currently used, has been demonstrated in treating depressive symptoms and promoting alertness and sleep–wake cycle synchronizations.[4] Here, we report a case involving a patient with DLB, which greatly improved with BLT.

A 63-year-old man with DLB was referred to the Department of Psychiatry for sleep disturbances, Hospital Fernand Widal, in Paris, France. His medical history included atrioventricular nodal reentrant tachycardia, haemochromatosis without any genetic mutation that did not require any medication, and high blood pressure effectively treated by verapamil 240 mg/day, with no other treatment intakes. DLB was diagnosed in 2015 based on the McKeith criteria[3]; his symptoms included mild parkinsonian syndrome (bilateral plastic rigidity, bradykinesia, slow walking, and hypomimia), cognitive decline (impairment of attention, memory, and visuospatial function) interfering with his daily life, fluctuating cognition, balance troubles, delusions, daytime sleepiness, and sleep behaviour disorders. His biggest complaint was the inability to watch television with his wife because he quickly developed daytime sleepiness. His spouse also reported severe daily nightmares, snoring, sleep disturbance with multiple awakenings, and agitation including violent sleep behaviours. Polysomnography confirmed that the patient had sleep disorders associated with very mild apnoea (Apnea–Hypopnea Index: 6) that did not require specific treatment. Melatonin had been previously prescribed, but the patient was reluctant to take it.

To address his condition, we proposed BLT and assessment every week for 6 weeks. Daytime sleepiness was assessed by the Epworth Sleepiness Scale, sleep quality by the Pittsburgh Sleep Quality Index, depression symptoms by the Montgomery–Åsberg Depression Rating Scale, and neuropsychiatric symptoms by the Neuropsychiatric Inventory, Nursing Home version. Nightmares were assessed by his wife, who maintained a sleep diary during the assessment period. No other treatments or care were provided during this intervention.

The patient underwent BLT (Luminette®, Belgium) with glasses every morning at 0830 hours for 30 min. The BLT was a blue-enriched light administered at 1000 lux. This level of illuminance is equivalent to traditional BLT at 10 000 lux, which is used to treat circadian rhythms disorders and seasonal affective disorders.[5,6]

After 1 week, the patient's daytime sleepiness, sleep disturbances, and depression improved. His Montgomery–Åsberg Depression Rating Scale total score declined, which was partly related to his improved sleep (Fig. 1a). He happily reported that he was able to watch television with his wife every evening during the past week, without falling asleep. Before BLT, he had gone to bed at 2030 hours most nights, whereas after the first week of BLT, he was able to stay awake until at least 2230 hours and awoke fewer times in the night (Fig. 1b). His wife also reported a noticeable decrease in nightmares and night agitation. Over the next 3 weeks of BLT, these effect remained stable and even mildly improved. Therefore, at 28 days, we decided to extend the BLT sessions to 45 min/day, leading to greater improvement in depressive symptoms.

This report highlights BLT's potential as a possible DLB treatment. We found it effective in improving depressive symptoms, daytime sleepiness, nightmares, and sleep disturbances. However, a previous case series in which BLT was used to treat five DLB patients did not find it effective.[7] This discrepancy with our result could be explained by the differences in study

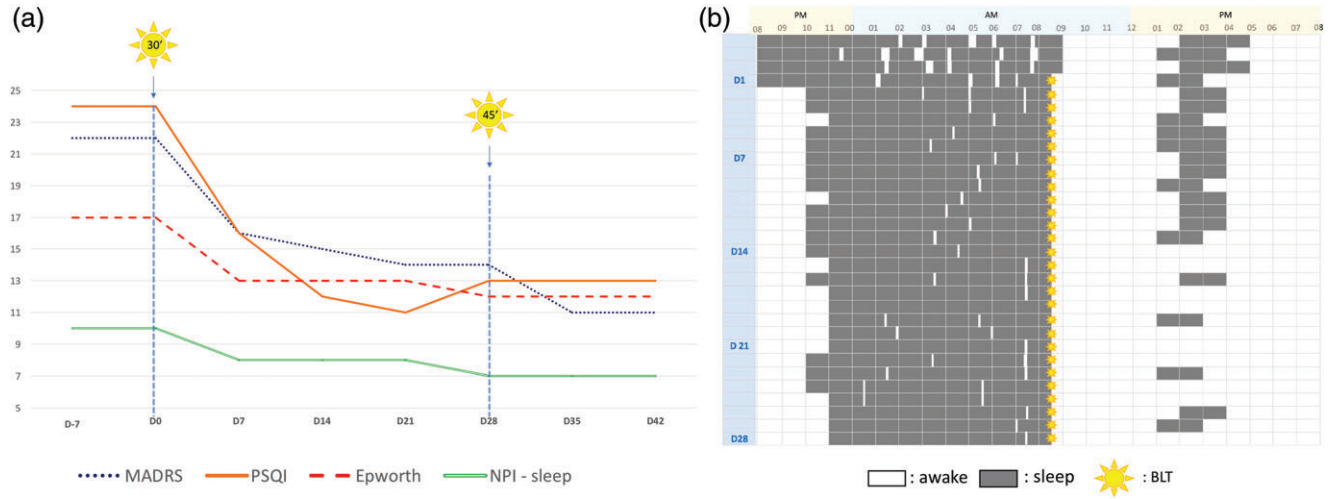

Figure 1 (a) Evolution of depressive symptoms, sleep quality, daytime sleepiness, and sleep disturbances in a patient with dementia with Lewy bodies during the period in which he underwent bright light therapy (BLT). (b) Sleep diary of a patient with dementia with Lewy bodies during the period of BLT. Epworth, Epworth Sleepiness Scale; MADRS, Montgomery–Åsberg Depression Rating Scale; NPI - sleep, Neuropsychiatric Inventory; PSQI, Pittsburgh Sleep Quality Index.

methodologies. The case series explored behavioural troubles by using only the Neuropsychiatric Inventory, whereas we explored several clinical symptoms that are known to be improved by BLT. Furthermore, compared to the patient in the present case, the five DLB patients had far more severe cognitive impairment, with Mini-Mental State Examination scores ranging from 2 to 17. The lack of efficacy may have been related to the advanced stage of the disease in the five patients.

We think that BLT helped improve our patient's sleep and depression symptoms, and it had a stable effect during the 6 weeks of treatment. For patients with mild DLB, BLT may be a promising symptomatic treatment for sleep disturbances. However, these findings need to be confirmed by larger studies.

ACKNOWLEDGMENT

The authors did not receive any financial support for this report.

DISCLOSURE

M. A. A. has no conflicts of interest to declare. C. P. is a member of the International Advisory Boards of Eli Lilly and Company and a consultant for Fujirebio, Alzohis, Neuroimmune, and Gilead Sciences. Additionally, C. P. has served as an investigator in several clinical trials for Roche, Eisai, Eli Lilly and Company, Biogen, AstraZeneca, Lundbeck, and Neuroimmune. P. A. G. received grants from Assistance Publique-Hôpitaux de Paris.

Marine Ambar Akkaoui [1], Claire Paquet[2] and Pierre A. Geoffroy[3]

[1]Psychiatry Academic Department, [2]Paris Diderot University, UMR-S 942, AP-HP, GH Saint-Louis – Lariboisière – F. Widal, Center for Cognitive Neurology and [3]Paris Diderot University - Paris VII, Paris, France

REFERENCES

1 Walker Z, Possin KL, Boeve BF, Aarsland D. Lewy body dementias. *Lancet* 2015; **386**: 1683–1697.
2 Ferman TJ, Smith GE, Dickson DW *et al*. Abnormal daytime sleepiness in dementia with Lewy bodies compared to Alzheimer's disease using the Multiple Sleep Latency Test. *Alzheimers Res Ther* 2014; **6**: 76.
3 McKeith IG, Boeve BF, Dickson DW *et al*. Diagnosis and management of dementia with Lewy bodies: fourth consensus report of the DLB Consortium. *Neurology* 2017; **89**: 88–100.
4 Maruani J, Geoffroy PA. Bright light as a personalized precision mood disorders treatment. *Front Psychiatry* 2019; **10**: 85. https://doi.org/10.3389/fpsyt.2019.00085.
5 Langevin RH, Laurent A, Sauvé Y. Évaluation préliminaire de l'efficacité de la Luminette® chez des adolescents atteints du syndrome de retard de phase du sommeil (SRPS) : essai randomisé en simple insu et contrôlé par placebo. *Médecine Sommeil* 2014; **11**: 91–97.
6 Meesters Y, Dekker V, Schlangen LJM, Bos EH, Ruiter MJ. Low-intensity blue-enriched white light (750 lux) and standard bright light (10,000 lux) are equally effective in treating SAD. A randomized controlled study. *BMC Psychiatry* 2011; **11**: 17.
7 Sekiguchi H, Iritani S, Fujita K. Bright light therapy for sleep disturbance in dementia is most effective for mild to moderate Alzheimer's type dementia: a case series. *Psychogeriatrics* 2017; **17**: 275–281.