

Using melatonin to reset the clock of hospitalized older patients

Scott R. Beach, MD, and Shamim H. Nejad, MD

Dr. Beach is an Attending Physician, Psychiatry Consultation and Acute Psychiatric Services, Massachusetts General Hospital and Instructor of Psychiatry, Harvard Medical School, Boston, MA. Dr. Nejad is Director, Burns and Trauma Psychiatry and Attending Physician, Psychiatry Consultation Service, Massachusetts General Hospital, and Instructor of Psychiatry, Harvard Medical School, Boston, MA.

Disclosure

The authors report no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

Helping hospitalized geriatric patients maintain an appropriate sleep-wake cycle can be a challenge. Older patients' circadian rhythm may be affected by several factors—eg, obstructive sleep apnea and restless leg syndrome—that contribute to disrupted sleep and daytime fatigue. Some patients may have dementing illnesses that could dysregulate sleep. Many older patients experience delirium during hospitalization, of which sleep-wake cycle disturbances are a hallmark. Finally, geriatric patients' natural sleep pattern often does not mimic a hospital's typical schedule.

Sleep medication side effects

Medications used to promote sleep can cause side effects in geriatric patients. Benzodiazepine use by older adults is discouraged because these medications could cause falls or contribute to delirium. Non-benzodiazepine hypnotics such as zolpidem, zaleplon, and eszopiclone pose a similar risk. Medications containing diphenhydramine predispose patients to deliriogenic effects via their anticholinergic properties. Tricyclic antidepressants carry risks, such as delirium secondary to anticholinergic effects, orthostatic hypotension, falls from α -1 blockade, and cardiac arrhythmias.

Atypical antipsychotics sometimes are used off-label to help initiate sleep, but they carry a "black-box" warning regarding sudden death from cardiovascular events in geriatric patients with dementia. Hydroxyzine and trazodone also are associated with side effects such as orthostatic hypotension and daytime sedation, and are not always effective.

Melatonin is a hormone secreted by the pineal gland in response to darkness,

under the control of the suprachiasmatic nucleus (SCN), and is thought to promote sleep via synchronizing effects on the SCN.¹ Melatonin is available as an over-the-counter dietary supplement and via prescription in dosages of 1 or 3 mg. The typical effective dose is 3 to 9 mg.¹ Patients should take melatonin in the mid-evening, ideally between 7 PM and 8 PM, and effects become evident after a few days. Side effects are rare; the most common are headache and nausea. Daytime sedation and vivid dreams also have been reported. Melatonin can be used safely in conjunction with other sleep aids and its major drug-drug interactions involve enhancing the effects of other sedatives.²

We have found melatonin to be effective for treating sleep disturbances in older hospitalized patients. Its effectiveness may stem from the high incidence of dysregulated or calcified pineal glands in geriatric patients, which leads to a marked reduction in melatonin secretion.³ Recent evidence also suggests melatonin may reduce the incidence of delirium in older adults, and it has been proposed as a delirium treatment in post-operative and intensive care unit settings.⁴

References

1. de Jonghe A, Korevaar JC, van Munster BC, et al. Effectiveness of melatonin treatment on circadian rhythm disturbances in dementia. Are there implications for delirium? A systematic review. *Int J Geriatr Psychiatry*. 2010;25(12):1201-1208.
2. Werneke U, Turner T, Priebe S. Complementary medicines in psychiatry: review of effectiveness and safety. *Br J Psychiatry*. 2006;188:109-121.
3. Schmid HA. Decreased melatonin biosynthesis, calcium flux, pineal gland calcification and aging: a hypothetical framework. *Gerontology*. 1993;39(4):189-199.
4. Al-Aama T, Brymer C, Gutmanis I, et al. Melatonin decreases delirium in elderly patients: a randomized, placebo-controlled trial. *Int J Geriatr Psychiatry*. 2011; 26(7):687-694.