Insomnia in elderly people

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ABSTRACT

An elderly man presented with chronic sleep problems that had recently worsened. He had evidence of disseminated vascular disease with residual left-sided weakness following a stroke. The examination was otherwise unremarkable, but his metabolic profile revealed electrolyte and vitamin deficiencies and an elevated parathyroid hormone level. Electrolytes and vitamins are critical for maintaining physiological balance. Facilitating sleep is especially important in older people for gait stability and sustaining emotional and physical health. Addressing these issues in this patient resulted in improvement, just as it should for other patients.

KEYWORDS Electrolyte abnormalities; geriatrics; insomnia; physiological imbalance; vitamin deficiencies

CASE DESCRIPTION

A 91-year-old man presented with sleep problems. He complained of difficulty falling asleep, early morning awakenings, and discomfort at night. The symptoms had worsened over the prior week, but insomnia had existed for a long time. His past history included hypertension, hyperlipidemia, coronary artery disease, and a stroke. He was not on psychiatric drugs, sleep medications, or analgesics but was prescribed atenolol, clopidogrel, lisinopril, hydralazine, pravastatin, pantoprazole, tamulosin, ezetimibe, and levetiracetam. Vital signs were in normal ranges. He was alert and oriented. Physical examination evidenced residual left-sided weakness due to a previous cerebrovascular accident.

The comprehensive metabolic panel documented calcium at 6.1 mg/dL and potassium at 2.9 mEq/L. Further assessments revealed an elevated parathyroid hormone level at 120 pg/mL, a low vitamin D level of 11 ng/mL, and a magnesium concentration of 0.8 mg/dL. Once the electrolytes were rebalanced, the patient reported sleeping well. After vitamin D was replenished, the vitamin D and parathyroid hormone levels returned to normal concentrations.

DISCUSSION

Many geriatric people suffer from problem sleep, with decreased duration and low efficiency.¹ Several electrolytes and minerals influence the sleep cycle. Magnesium is

important in regulation of central nervous system excitability, through ion channel conductivity.² It acts as an N-methyl-D-aspartate antagonist and gamma-aminobutyric acid agonist, thereby promoting sleep.^{1,3} Magnesium supplementation elevates melatonin levels and aids quality sleep for people of all ages.¹

Calcium-related pathways also regulate the duration of sleep.³ Calcium supplementation might increase the risk of myocardial ischemia. Subnormal levels of vitamin D may lead to atheromatous vascular diseases with accumulation of calcium in the arteries.

Vitamin D receptors are present in the brain and execute important functions for sleep regulation.⁴ Vitamin D deficiency can result in insomnia, with poor sleep quality, sleep of short duration, and daytime sleepiness; concentrations <20 ng/mL are of special concern.

Insomnia can be problematic in elderly people, increasing the risk for gait instability, cognitive impairments, physical dysfunction, and mortality. Being unsteady while walking is dangerous, especially for older persons.^{5–7} Death frequently follows injuries from falling down in geriatric populations. Insomnia often results in a poor quality of life, ill health, stress, depression, and increased medical care costs.

In conclusion, physicians sometimes incompletely address vitamin deficiencies or even electrolyte abnormalities in some older patients. Monitoring electrolyte concentrations and vitamin levels in those prescribed diuretic medicines is particularly important. This similarly applies to the general

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Received September 12, 2019; Revised October 17, 2019; Accepted October 28, 2019.

population, especially older people with suboptimal oral intake and/or decreased absorption. Addressing electrolyte imbalances and replacing vitamin deficiencies can help diminish insomnia. It is important to check electrolytes and vitamin D levels as part of an insomnia workup.

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