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Review Article

Management of Sleep Disorders in the Elderly

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Abstract: Healthy elderly can adapt to physiological changes in their sleep. The prevalence of sleep disorders and insomnia in particular is high in the elderly. They are often associated with one or more somatic and/or psychiatric conditions that they aggravate. In clinical practice, it is important to assess whether the sleep complaint fits into the framework of: 1) Physiological changes in the sleep-wake cycle during the day or circadian rhythms related to aging. 2) Defective lifestyle habits. 3) A specific sleep disorder, 4) A somatic or psychiatric condition that requires specific treatment; The management of sleep disorders in elderly should not be minimized and requires rigorous and multidisciplinary management. Psychotherapies are preferred as first-line treatment. In the case where therapeutic prescription is necessary, low doses must be given, and adjusted according to the terrain and the evolution. Through this article, we will try, through the latest recommendations, to make an update on the management of these disorders in the elderly, who are a weakened terrain associating psychiatric and somatic comorbidities.

Keywords: Sleep Disorders, Elderly, Circadian Rhythms, Insomnia, Sleep Management.

A. INTRODUCTION

According to the results of the National Population and Family Health Survey (ENPSF) in 2018, the proportion of people aged 60 and over in Morocco is 11.1%. This trend is expected to continue and even accelerate to reach 15.4% in 2030 [1].

Sleep corresponds to a physiological dissolution of attention and vigilance that is reversible, repetitive and periodic. It fulfills essential functions for physiological balance and therefore represents one of the fundamental needs of the body [2].

Epidemiological studies indicate that 40 to 70% of people over 65 suffer from chronic nocturnal sleep disturbances. Despite this, sleep disorders are often underdiagnosed and yet their consequences are numerous and particularly harmful.

During normal aging, there is difficulty in initiating and maintaining nocturnal sleep, with an increase in the number of awakenings and an alteration of the sleep-wake rhythm [3].

The study of sleep physiology, which is done using polygraphic recordings, has allowed the distinction of 3 states of vigilance: wakefulness, slow wave sleep and rapid eye movement sleep.

Polygraphic recording of sleep makes it possible to objectify the sleep disorder by studying the internal architecture of sleep.

Most patients with symptoms of sleep disorders can be effectively managed in the context of primary care. Primary care physicians can use pharmacological and nonpharmacological approaches, the latter generally being considered as a first-line treatment. A primary care physician may choose to refer the patient to a specialist for refractory cases [4].

Through this review, we will describe the most common sleep disorders in the elderly as well as their management.

B. MANAGEMENT OF PRIMARY INSOMNIA IN THE ELDERLY

Primary insomnia is defined as a sleep disorder not attributable to an organic, psychiatric or environmental cause.

For this, before treating, the physician must exclude insomnia related to somatic pathologies such as chronic pain during musculoskeletal diseases,

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cardiopulmonary insufficiency, gastrointestinal, neurovascular and degenerative disorders such as stroke and Parkinson's disease, as well as that related to psychiatric disorders such as mood disorders, anxiety disorders and intrinsic sleep disorders such as sleep apnea syndromes and restless legs syndrome, etc.

Finally, insomnia secondary to medications such as corticosteroids, theophylline, beta-blockers, levodopa, diuretics, antidepressants, prolonged consumption of Benzodiazepines.

1. Non-drug approaches

a. Hygiene and dietary rules

The elderly subject should be encouraged to:

- Use the bed only for sleeping
- Go to bed and get up at the same time every day,
- Make sure to have a comfortable, cool bed, in a well-ventilated room, away from noise and light.
- Promote sleep by developing and maintaining sleep rituals. This can include activities such as preparing for sleep with 20 to 30 minutes of relaxation, such as listening to soft music, meditating or doing breathing exercises. Also opt for calming activities such as yoga.
- A warm bath can be beneficial, as the increase in internal temperature can activate brain areas involved in sleep regulation, while preventing insomnia [5].
- Eat lightly in the evening

It is recommended to avoid certain practices to promote quality sleep such as:

- Napping after 3 p.m.
- Going to bed too early in the evening
- Eating copiously, consuming alcohol and coffee, smoking, exercising, watching television, or using smartphones and computers.
- Noise, excessive light and too high a temperature
- The presence of animals in the room and sharing the room with an overly active or noisy partner.

b. Light therapy

Light therapy is regular exposure to an artificial source of white light.

It has been shown to be beneficial for maintaining sleep in insomnia disorders and appears effective compared to a placebo. It is more effective as part of a multi-component intervention (hygiene and dietary rules, cognitive behavioral therapies, and melatonin). Indeed, the current consensus favors multi-component interventions to provide the greatest benefit in the treatment of chronic insomnia [6].

Indeed, light therapy significantly improves cardiovascular and sleep quality [7].

c. Cognitive-behavioral therapies

The main goals of CBT-I are to reduce autonomic activation in the pre-sleep period, modify certain habits and regularize sleep schedules, correct erroneous beliefs, and reduce excessive worry that fuels sleep-related performance anxiety.

Cognitive-behavioral therapy for insomnia (CBT-I) is advocated as a first-line treatment and a standardized protocol has been developed [8]. The main advantage of providing CBT-I instead of prescribing medication to people with insomnia is that the current evidence on sleeping pills supports only short-term use and effects and that CBT-I has superior long-term effects [9]. Furthermore, although CBT-I may cause side effects or adverse reactions, the level of severity is less compared to medication dependence, medication overuse, comorbid chronic pain, and accidents due to taking sleeping pills [9, 10]. In addition to having a beneficial effect on insomnia symptoms, CBT-I has been shown to be effective in reducing depression, anxiety, and chronic pain, as well as increasing sleep-related quality of life [11].

d. Drug treatments

✓ **Non-benzodiazepine drugs**

Melatonin is a natural hormone produced by the pineal gland (epiphysis), acting as an endogenous inducer of sleep. Its secretion is stimulated by darkness and inhibited by light. There is a significant temporal correlation between the nocturnal increase in melatonin and the onset of sleep [12]. The brain's regulation of sleep according to the circadian rhythm decreases with age, which is associated with the secretion of Melatonin [13]. In people over 55 years of age who suffer from sleep deprivation, melatonin production is much lower than in healthy individuals without sleep disorders [13]. Melatonin and melatonin agonists are considered safer than benzodiazepines and non-benzodiazepines [13]. Unlike other medications, Melatonin does not cause withdrawal or dependence symptoms, nor cognitive decline. Thus, melatonin is considered a safer alternative in the treatment of insomnia [14]. The recommended daily dose for the elderly is 2mg/day.

✓ **Benzodiazepines and benzodiazepine-related hypnotics**

These are GABA receptor modulators. The prescription of BZD and hypnotics should be done carefully in elderly people who have fallen [15].

According to the recommendations of the HAS (high health authority), it is necessary to favor molecules with a short half-life such as oxazepam and lorazepam as well as prescription at low doses and for a short duration [12].

Their prescription in the elderly is associated with a significantly increased risk of adverse effects including falls, fractures and cognitive side effects [16].

The Beers criteria published by the American Geriatrics Society discourage the use of benzodiazepines and drugs (e.g., zolpidem) in the elderly [17] and they should be used with caution in this population.

In fact, it is even recommended to consider deprescribing in elderly people taking a benzodiazepine for insomnia [18].

C. Management of sleep apnea syndrome (SAS)

It is characterized by repeated episodes of upper airway obstruction resulting in apneas and/or hypopneas. These respiratory events during sleep result in intermittent hypoxia, sleep fragmentation, and daytime sleepiness.

According to the American Academy of Sleep Medicine (AASM) [19], the diagnosis and classification of SAS was made on the basis of the average number of apneas and hypopneas per hours of sleep.

Increased airway collapsibility is due to various factors physiologically associated with age and explains the increased number of cases of SAS observed [20]. The confirmatory diagnosis is made by polysomnography.

International guidelines on SAS highlight some important factors that should be considered in elderly patients. First, a clinical history including findings specific to the elderly should be taken; secondly, sleepiness should not be considered a physiological symptom inherent to old age, as excessive daytime sleepiness is always pathological, regardless of the patient's age; thirdly, excessive daytime hypersomnia should not be considered as always associated with OSA; and finally, a patient suspected of having OSA should not be denied any diagnostic or therapeutic procedure solely because of his or her age [20].

There is clear evidence for the effectiveness of continuous positive airway pressure (CPAP) in improving the quality of life of patients with OSA, especially in those who are most symptomatic. However, the number of studies in the elderly is still small. Indeed, the improvement in CPAP is less apparent in elderly patients than in younger patients with OSA, probably because the clinical impact of OSA on quality of life is less pronounced [21].

There are other therapies for SAS, such as mandibular advancement devices, positional therapy, and other modalities, but most of them are less predictable than CPAP in their effectiveness [21]. For overweight or obese subjects, diet and regular physical activity should be recommended [22].

D. Restless Legs Syndrome (RLS)

It is characterized by an urgent need to move the legs often accompanied by an unpleasant sensation. This need to move or unpleasant sensations begin or increase at rest or during immobilization. They are relieved by movement and worsen in the evening or at night. Subjects with RLS report more sleep disturbances, depression, high blood pression and heart problems [3]. Only 2 to 3% of subjects have symptoms severe enough to resort to pharmacological treatment [12].

Management is based on [23]:

✓ **Hygiene and dietary measures:**

- Regular sleep-wake schedules
- Relax and avoid screens before falling asleep
- Avoid alcohol, caffeine and nicotine
- No physical activities in the evening
- Advise careful intellectual activity
- Iron supplementation in case of iron deficiency

✓ **Dopaminergic agents:**

Symptom control is most often achieved with lower doses than those required in Parkinson's disease.

Dopaminergic agents include levodopa and dopaminergic agonists. Only 3 molecules have marketing authorization (MA) in France: adartrel, sifrol and neupro.

E. REM sleep behavior disorder

A parasomnia that occurs during REM sleep and is characterized by dream-enactment behavior, which involves acting out dream content, including talking, screaming, punching, and kicking,

REM sleep without atonia, loss of normal skeletal muscle atonia during REM sleep, as documented by polysomnography; and altered dream mentality are common. It is often associated with injury to patients and their bed partners during sleep [22].

Diagnosis requires repeated episodes of sleep-related vocalizations and/or complex motor behaviors; these behaviors are documented by polysomnography during REM sleep [22].

If left untreated, nearly 90% will develop autonomic dysfunction [24]. Avoidance of hazards, including removing potentially dangerous objects from the room or placing a mattress on the floor, is important to prevent injury related to the disorder. Clonazepam is effective in approximately 90% of patients, but for elderly patients, the potential side effects of daytime sleepiness and dizziness should be noted. It is important to look for associated SAS because clonazepam can worsen apneas. In addition, severe SAS can mimic REM sleep behavior disorder [25].

In the United States and Europe, 3 to 12 mg of melatonin at bedtime has been shown to be effective in the management of this disorder [26].

F. Irregular Sleep-Wake Rhythm Disorders in the Elderly

Irregular sleep-wake rhythm disorder (ISWRD) is characterized by a dysrhythmic sleep-wake pattern with multiple cycles during a 24-hour day. It is a rare condition that occurs primarily in children with neurodevelopmental disorders, older adults with neurodegenerative diseases, patients with head trauma, and some individuals with schizophrenia [27].

The primary goal of treatment is to consolidate nocturnal sleep and maintain daytime wakefulness by improving the intensity of the endogenous circadian rhythm to make it consistent with the circadian rhythm of the external environment [28].

The treatments indicated for this disorder include:

a. Light therapy:

Bright morning light (2,500 lux) has been shown to increase nighttime sleep time by 20 to 30 minutes, while bright nighttime light has been shown to improve rest-activity patterns [28]. Similarly, bright morning light treatment (4,500 lux) has been shown to normalize sleep-wake patterns in about half of a small group of children with neurodevelopmental delay [28].

b. Melatonin

In older adults, phototherapy or phototherapy combined with melatonin treatment at a dose of 1 to 20 mg is therefore recommended, while melatonin treatment alone is not [28].

c. Behavioral therapy

Patients should be encouraged to engage in appropriate physical activity and exercise during the day to increase the amount of outdoor light they receive. During the treatment period, patients should be advised to strictly adhere to the work-rest schedule. Even when drowsy and tired, a patient should do his or her best to stay awake during the prescribed wakefulness period and gradually adjust and establish the regular sleep-wake cycle [29].

CONCLUSION

Sleep disorders in the elderly are common and cause significant difficulties in terms of health complications and quality of life. Advances in understanding their origin, causes, and management should help improve the quality of life of the elderly by avoiding the adverse effects associated with inappropriate treatments. In any case, sleep hygiene contributes to improving sleep disorders in the elderly.

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