

Sleep disturbances in allergic rhinitis: disease and/or the drug?

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ABSTRACT

Allergic rhinitis is a common chronic disease in adults as well as children. Allergic rhinitis has negative impact on sleep and quality of life of the patient. Antihistamines are widely used in the management of allergic rhinitis. First generation antihistamines cause sedation and drowsiness. Second generation antihistamines cause minimal or no sedation. There is difference in propensity to cause sedation amongst second generation antihistamines. As sleep is important for physical as well as mental health, present article reviews impact of allergic rhinitis and antihistamines on sleep.

Keywords: Allergic rhinitis, Antihistamines, Sedation, Sleep

INTRODUCTION

Allergic rhinitis is a common chronic respiratory illness¹ and affects 10-25% of the world's population.² Allergic rhinitis is associated with impairments in day to day life functioning and quality of life. Patients with allergic rhinitis may suffer from sleep disorders, emotional problems and impairment in activities and social functioning. According to Allergic rhinitis and its impact on asthma (ARIA) classification, allergic rhinitis is classified based on duration of symptoms and severity of symptoms. Based on duration of symptoms it is classified as "intermittent allergic rhinitis" or "persistent allergic rhinitis" while based on severity symptoms it is classified into "mild allergic rhinitis" or "moderate/severe allergic rhinitis". ARIA has given consideration to sleep disturbances in classification of allergic rhinitis which signifies the importance of sleep in the allergic rhinitis. Sleep disturbance, impairment of daily activities, leisure and/or sport, impairment of school or work and troublesome symptoms differentiate the severity of allergic rhinitis.³

SLEEP DISTURBANCES IN ALLERGIC RHINITIS

Allergic rhinitis is associated with rhinorrhea, itching, sneezing and nasal congestion. The impact of allergic rhinitis is beyond nasal symptoms. Nasal obstruction, which is one of the symptoms of allergic rhinitis can cause sleep disturbances and daytime sleepiness.⁴ In addition, nasal obstruction may be responsible for abnormal breathing during sleep. Hence controlling symptoms is one of the major goals while managing allergic rhinitis. Uncontrolled symptoms may lead to disturbance in sleep, daytime fatigue, and adverse impact on overall cognitive functioning.⁵ In a study, Leger D et al (2006) reported that 43.7% of allergic rhinitis patients had reported fatigue on awakening despite a normal night's sleep.⁶

Patients with the obstructive sleep apnoea syndrome (OSAS) have increased prevalence of perennial allergic rhinitis. Allergic rhinitis may increase risk of OSAS in children.⁵

DRUG INDUCED SLEEP DISTURBANCES IN ALLERGIC RHINITIS

H1 antihistamines are widely used and considered as mainstay of treatment in allergic rhinitis. H1 antihistamines are classified as 'first-generation H1-antihistamines' and 'second-generation H1-antihistamines.

LIMITATIONS OF FIRST GENERATION H1 ANTIHISTAMINES

First generation antihistamines are not receptor selective and often interact with other receptors like muscarinic receptors, alfa adrenergic receptors and serotonergic receptors. First generation antihistamines penetrate the blood-brain barrier and cause drowsiness, sedation, somnolence and fatigue. Recently GA² LEN (Global Allergy and Asthma European Network) task force assessed the unwanted side-effects and potential dangers of first-generation H1-antihistamines and published a position paper on risks of first generation H1 antihistamines. This paper has discussed limitations of first generation antihistamines in great detail. First-generation H1-antihistamines are sedating and have reported to impair learning and reduce work efficiency. Many physicians prescribe sedating antihistamines at night for better sleep, but there is not strong scientific data to support this claim; infact first-generation antihistamines produce an unnatural sleep.⁷

First generation antihistamine causes reduction in REM sleep. A study by Boyle J et al (2006) in Japanese volunteers evaluated acute effects of two H1 antihistamines i.e. fexofenadine and chlorpheniramine on nocturnal sleep architecture, next day cognitive function and psychomotor performance in Japanese volunteers. Chlorpheniramine in this study was found to increase in the latency to sleep onset and rapid eye movement (REM) sleep, and also reduced REM sleep duration compared to placebo. However fexofenadine was not associated with these changes. Single nocturnal dose of fexofenadine does not cause disruption of night-time sleep and also does not have detrimental effects on cognitive performance the next day.⁸

RATIONALE OF USING NON-SEDATING ANTIHISTAMINES IN ALLERGIC RHINITIS

Drug treatment of allergic rhinitis is usually guided by type and severity of allergic rhinitis. The drugs are selected based on their potential to reduce symptoms i.e. rhinorrhea, sneezing, itching and nasal congestion over 24 hours of duration. Antihistamines are mainstay of treatment in allergic rhinitis.

Second-generation antihistamines like cetirizine, loratadine, fexofenadine, and desloratadine have high potency and long durations of action compared to first generation antihistamines. Second generation antihistamines have minimal or no sedating properties.⁹

Newer antihistamines have shown number of additional anti-inflammatory effects independent of their H₁ antagonist action. These additional anti-inflammatory properties may help to enhance the effects of newer antihistamines in allergic disease.¹⁰

EAACI/GA²LEN/EDF/WAO guideline on management of urticaria has recommended not to use sedating antihistamines as first line agents in the routine management of chronic urticaria except where non sedating antihistamines are not available or in special situations where they prove to be more effective or better tolerated than non sedating H1-antihistamines because new generation non-sedating antihistamines without these side-effects are available and have a higher efficacy and duration of action.¹¹ The same principle could be of use in treatment of allergic rhinitis while selecting an antihistamine.

DIFFERENCE IN SEDATION POTENTIAL AMONGST SECOND GENERATION ANTIHISTAMINES

Though second generation antihistamines are said to be non-sedating antihistamines, there is a difference in their potential to cause sedation. For example, fexofenadine does not cause sedation at normal or higher than recommended dose while cetirizine has a potential to cause sedation at both recommended (therapeutic) as well as higher than recommended (supra-therapeutic) dose. Other second generation antihistamines like levocetirizine and desloratadine may have the potential of sedative effect at higher i.e. supra-therapeutic dose.¹²

The above review of literature confirms that both allergic rhinitis and some of the antihistamines can cause disturbances in sleep.

CONCLUSION

Allergic rhinitis is a common chronic respiratory problem worldwide. Allergic rhinitis is associated with sleep disturbances in both children and adults. Antihistamines are mainstay of treatment in allergic rhinitis. First generation antihistamines are sedative in nature. Apart from minimal or no sedation, newer second generation antihistamines have other advantages like additional anti-inflammatory properties and long duration of action. Hence, newer drugs may be preferred over first generation antihistamines in the management of allergic rhinitis.

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