"GLOBAL HEALTH AND MODERN MEDICINE: INNOVATIONS AND PERSPECTIVES"
International Conference titled

Website:https://worldsiencepub.com/index.php/isngcs September edition,2026

SLEEP DISORDERS IN ARTERIAL HYPERTENSION: NEUROPHYSIOLOGICAL MECHANISMS AND INTEGRATED TREATMENT STRATEGIES

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Abstract

A growing body of scientific research underscores the strong interplay between sleep disturbances, notably insomnia, and arterial hypertension. Nevertheless, current literature presents variable and occasionally conflicting findings regarding this association.

According to Y. Zhan et al. (2014), arterial hypertension affects 37.3% of individuals with normal sleep patterns, compared to 48.0% among those suffering from insomnia. Furthermore, the incidence of insomnia is roughly 1.5 times higher in hypertensive individuals, highlighting a bidirectional relationship.

A retrospective cohort study from Taiwan (2016) further confirms that insomnia elevates the risk of developing arterial hypertension by 21%. Crucially, objectively quantified short sleep duration demonstrates a robust correlation with increased blood pressure levels.

Keywords: insomnia, arterial hypertension, sleep disturbances, polysomnography, neurophysiological features.

Sleep disorders, particularly insomnia, are highly prevalent among patients with arterial hypertension. According to epidemiological studies, their prevalence ranges from 19% to 47.9%. At the same time, the prevalence of hypertension among individuals with insomnia ranges from 21.4% to 50.2%, whereas among individuals without sleep disturbances it is significantly lower.

Studies involving ambulatory blood pressure monitoring have shown elevated nighttime blood pressure levels in patients with insomnia. These findings suggest that insomnia may act as a risk factor for hypertension.

The pathophysiological mechanisms linking these conditions include increased activity of the sympathetic nervous system and the hypothalamic–pituitary–adrenal axis, as well as frequent comorbidity with anxiety disorders.

The Pittsburgh Sleep Quality Index (PSQI) is widely used to assess sleep quality. Patients with hypertension typically demonstrate higher PSQI scores, which correlate with systolic and diastolic blood pressure levels as well as with non-dipper circadian patterns.

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Both hypertension and insomnia are associated with cognitive impairment. However, the relationship between sleep disturbances and cognitive dysfunction remains controversial due to differences in research methodologies and patient characteristics.

Aim of the Study

To identify clinical and neurophysiological features of sleep disorders in patients with arterial hypertension at different stages of the disease, and to evaluate their relationship with autonomic regulation, circadian rhythms, and cognitive status, followed by the development of effective approaches to комплекс therapy.

Materials and Methods

A total of 134 patients diagnosed with arterial hypertension and cognitive impairment were examined in 2024–2025.

Patients were divided into two groups:

Maingroup(n=70):

Meanage—57.4±1.8years

Male-to-female ratio — 1:2.14

Comparisongroup(n=64):

Meanage—54.5±2.12years

Male-to-female ratio — 1:2.16

The main group received standard antihypertensive therapy combined with комплекс correction of sleep disorders. The comparison group received only standard therapy.

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