

may be due to the effect of competitive inhibition of iNOS by AG with a decrease in the formation of peroxynitrite (ONOO⁻) and proinflammatory cytokines, as well as an increase in bioavailability and a reduction in the deficiency of the NOS substrate L-arginine.

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THE EFFECT OF HYPERBARIC OXYGENATION ON NEUROPSYCHIATRIC STATE OF PATIENTS WITH HYPERTENSION AND OBSTRUCTIVE SLEEP APNEA

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Relevance. Arterial hypertension (AH), commonly known is a widespread condition affecting 1.4 billion adults worldwide which has become one of the most common leading cause of many cardiovascular diseases. Despite modern medical advances, hypertension control remains a serious public health problem. It frequently occurs alongside obstructive sleep apnea (OSA), forming a complex interplay that exacerbates cardiovascular risks and impairs overall health [1].

Hyperbaric oxygen (HBO) therapy is aimed at reducing general and local hypoxia. The positive effects of HBO in the treatment of hypertension are well known, regulating the autonomic nervous system and improving blood gas composition [2]. However, the effect of HBO on the neuropsychiatric state (NPS) of patients with AH and OSA has not been fully studied [3].

Target. To study the effect of HBO on well-being, activity, and mood in patients with hypertension and obstructive sleep apnea syndrome.

Research methods. The retrospective study was conducted at Grodno City Clinical Hospital No. 2 (Belarus). This study includes a total of 45 patients with AH and OSA. Patients receiving a combined antihypertensive therapy constituted the comparison group (n=14). Another group of patients also additionally received eight HBO sessions (HBO group, n=31). The groups were homogeneous in terms of gender (p=0.82) and age (p=0.47). For each patient blood pressure (BP) and heart rate were measured. OSA was assessed using the SOMNOchek micro (Loewenstein Medical, Germany), and patients were divided into groups: mild (AHI less than 25) and severe sleep apnea (AHI more than 25). The Wellbeing – Activity – Mood (WAM)

questionnaire was used to assess the patients' wellbeing which included 30 questions. Nonparametric statistics were used to process the data.

Results and their discussion. The testing results revealed no statistically significant differences in wellbeing, activity, or mood between the HBO group and comparison group (Kruskal-Wallis test, $p \geq 0.05$), indicating an improvement in the patients' wellbeing while controlling their blood pressure. However, a detailed analysis of the obtained data revealed a more significant change in the parameters and a higher reliability of differences after HBO sessions: Mann-Whitney U Test, $p < 0.05$ in the presence of only antihypertensive therapy and $p < 0.005$ with the addition of HBO, respectively. BP decreased in the HBO group: systolic BP was controlled at 130 [120; 130] mmHg, and diastolic BP – 80 [75; 80] mmHg (Wilcoxon Test, $p < 0.05$). Calculation of the test results revealed a reliable difference between mild and severe sleep apnea after any type of treatment (Mann-Whitney U Test, $p < 0.05$). It was found that well-being and mood changed to a greater extent in patients with severe OSA (Mann-Whitney U Test, $p < 0.05$), but they did not reach a favorable level (more than 4 points). The body likely requires time to adapt to new blood pressure and oxygen saturation levels.

Conclusions. HBO therapy holds significant promise as a therapeutic modality for improving the NPS in patients with AH and OSA. Properly selected treatment optimizes oxygen delivery to brain cells, thereby improving night time sleep, as well as well-being and mood during the day.

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