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NEW TREATMENT APPROACHES IN NEURODENEGENERATIVE DISEASES

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Abstract. This article analyzes modern approaches to the treatment of neurodegenerative diseases - Alzheimer's, Parkinson's, Huntington's and other degenerative diseases of the nervous system. Cognitive and motor disorders resulting from neuronal degeneration dramatically reduce the quality of human life. The article presents information on the limited effectiveness of traditional pharmacotherapy methods, innovative approaches - gene therapy, stem cell transplantation, neuroprotective drugs, immunotherapy and the development of individual treatment strategies using artificial intelligence. The relevance of managing neurodegenerative diseases in the global health system is emphasized.
Keywords. Neurodegenerative diseases Alzheimer's Parkinson's Gene therapy Stem cell therapy Neuroprotection Innovative treatment.

Neurodegenerative diseases are a group of chronic diseases that develop as a result of the gradual degeneration of neurons in the central nervous system. The most common of them are Alzheimer's disease (the main cause of dementia), Parkinson's disease (the main cause of motor disorders) and Huntington's disease. According to WHO, the number of patients with dementia worldwide has exceeded 55 million, and by 2050 their number is expected to exceed 150 million. Effective treatment of these diseases is one of the most important medical challenges facing humanity. Limitations of traditional treatment methods; In Alzheimer's disease, acetylcholinesterase inhibitors and NMDA-receptor antagonists provide only symptomatic relief, but do not stop the progression of the disease. In Parkinson's disease, levodopa and dopamine agonists temporarily reduce motor symptoms, but their effectiveness decreases in the long term and side effects occur.

These treatments cannot completely eliminate the pathogenesis of the disease. Innovative treatment approaches:

a) Gene therapy Allows you to correct mutated genes that cause the disease or control their expression. Gene therapies that stimulate the production of dopamine in Parkinson's disease are being studied in clinical trials.

b) Stem cell therapy Allows you to stop the degeneration of neurons and restore them. Clinical trials are underway to replace neurons in Parkinson's and Alzheimer's diseases.

c) Neuroprotective drugs Drugs that reduce oxidative stress and neuroinflammation (antioxidants, mitochondrial stabilizers). New molecules that reduce the accumulation of tau proteins and beta-amyloid are being tested.

d) Immunotherapy Antibodies against amyloid beta and tau proteins have been developed (for example, aducanumab - conditionally approved by the FDA for Alzheimer's). Immunological treatments aimed at reducing neuroinflammation are being developed.

e) Artificial intelligence and telemedicine Automatic analysis of brain images for early diagnosis of disease. Creation of a personalized treatment plan based on individual genetic and biomarker data.

Conclusion:

Neurodegenerative diseases remain one of the greatest challenges for the global healthcare system today. Traditional symptomatic treatments cannot completely eliminate the pathogenesis of the disease. Therefore, innovative approaches such as gene therapy, stem cell transplantation,

immunotherapy and neuroprotective drugs are the main directions for the effective treatment of these diseases in the future. Early diagnosis of patients and treatment through a personalized approach will help reduce the consequences of these diseases on a global scale.

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