COGNITIVE IMPAIRMENTS IN CHRONIC HEART DISEASE INSUFFICIENCY

Sadullaev Dilshod Izbiloevich
Bukhara State Medical Institute
sadullaev_2021@mail.ru
https://orcid.org/0009-0001-9973-4113
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Introduction: Chronic heart failure (CHF) is a syndrome accompanied by a decrease in cardiac output or an increase in heart filling pressure due to structural or functional disorders of the myocardium. CHF remains an important problem in modern medicine, being one of the main causes of hospitalization and mortality. It affects more than 64 million people worldwide. In Europe, the prevalence of CHF among all functional classes according to the classification of the New York Heart Association (NYHA) is 7%, and for grades III-IV — 2.1%. More than 600,000 patients over the age of 65 are discharged with CHF every year, with a 25% chance of re-hospitalization within 30 days and 70% a year after discharge. The frequency of repeated hospitalizations and mortality is increased by factors such as low adherence to therapy, ignoring the need for outpatient visits, and difficulty recognizing early symptoms of disease progression, which is often associated with cognitive impairment. The combination of CHF and cognitive dysfunction has attracted the attention of specialists in recent years, especially in the context of the high prevalence among the elderly. Cognitive functions include memory, gnosis, speech, praxis, and attention. Cognitive impairments occur in 30-80% of patients with heart failure and can range from mild cognitive impairment to dementia. These patients often have problems with memory, decreased concentration, and delayed information processing, which leads to a decrease in self-care and a decrease in the ability to respond adequately to deterioration, which in turn reduces treatment adherence. Thus, cognitive impairments worsen the quality of life, increase the frequency of hospitalizations, increase mortality and negatively affect the prognosis. Despite the high prevalence, the pathophysiology of cognitive impairments in CHF has not yet been fully studied, and little attention has been paid to their recognition and treatment. The article reviews major studies on this topic, describes the pathophysiological mechanisms and potential new therapeutic approaches to prevent the progression of cognitive impairment in patients with heart failure.

Cognitive changes in heart failure: In recent years, many studies have been conducted on the association of cognitive impairments with various areas of

brain damage in patients with CHF. Such patients often experience memory impairment (especially verbal and visual), decreased concentration, slower information processing, and impaired executive functions.

Patients with cognitive impairments often have several risk factors, both systemic and related to microvascular diseases of the brain. Additionally, in patients with heart failure, a systemic inflammatory process may contribute to the development of cognitive impairment. In particular, molecules such as tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6) and cortisol, as well as elevated plasma homocysteine levels, are associated with neuronal degeneration. Increased secretion of inflammatory cytokines increases neurotoxicity through glutamate secretion, which causes cell damage, disrupts synaptic plasticity, and impairs memory.

In addition, there is a wealth of evidence linking atrial fibrillation (AF) with the risk of cognitive impairment and dementia. Studies have shown that cognitive abilities and memory deteriorate in patients with CHF and atrial fibrillation due to a decrease in cerebral blood flow due to a loss of atrial systolic activity and a decrease in stroke volume. Atrial fibrillation is also associated with cognitive deficits through various mechanisms, including micro- and macroembolic events. In patients without clinical stroke, the association between fibrillation and cognitive impairment may indicate the presence of latent embolisms contributing to cognitive decline. Microembolization of the brain may occur due to a decrease in thrombomodulin levels, deterioration of myocardial contractility and congestive heart failure

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