THE CLIMATE CHANGE IMPACT ON THE HEART FAILURE PATIENTS' CARE

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Keywords: *climate change, cardiovascular disease, heart failure, patients' care.*

Introduction. Climate change represents long-term changes in temperature and weather patterns, with various impacts on human health. These changes have contributed to increased rates of death due to heat stroke and non-infectious diseases, including cardiovascular, pulmonary, malnutrition, and contagious diseases. Heart failure (HF) is a condition with heightened vulnerability in the face of climate change, necessitating adjustments in the management of these patients.

Aim. The goal of our review was to analyze the impact of climate change on heart failure patients' care.

Material and methods. We conducted a straightforward bibliographic study by searching for the keywords "climate change," "cardiovascular disease," "heart failure," and "patients' care" using the search system of the PubMed database. We focused on articles from the last 5 years. As a result, we identified 75 sources of information and examined 15 of them. These sources encompassed all the keywords, allowing us to explore the impact of climate change on heart failure etiology, monitoring, and treatment.

Results. Patients with HF are a group with increased vulnerability in the context of climate change. Climate change affects heart health through rising air temperatures, increased air pollution, and shifts in dietary patterns. The mechanisms of worsening HF include: increased blood viscosity, surface blood circulation, and sweating, which leads to increased cardiac workload, dehydration, salt depletion, hemoconcentration, and increase risk of thrombosis. In addition, heat stress was suggested to induce the release of interleukins modulating local and systemic acute inflammatory responses that can result in HF by increasing damage to heart tissue and inflammation with increased levels of B-type natriuretic peptide and C - reactive protein, both of which are predictors of HF prognosis and severity. Increased cardiac strain and output, arrhythmias, and peripheral oedema may render HF patients vulnerable to heat-related sudden death and in-hospital mortality. The hemodynamic changes determined by heat stress may be less tolerated in patients with HF, with a poor cardiovascular reserve, especially in case of valvular heart diseases or cardiomyopathies. Chronic exposure to air pollution is similar to traditional risk factors, which can lead to the initiation of oxidative stress, and low-grade inflammation and create harmful biological intermediates. The general principles of care include fluid intake, avoidance of the hottest environments, use of appropriate clothes, and reduced physical activity during hot weather. The care of HF patients can be affected by the modifications in drug absorption, distribution, and elimination, and subsequently, the therapeutic response. Another issue is that some drugs can interfere with normal thermoregulatory function, including changes in cardiac output and sweat rate, peripheral vasodilation, and dehydration. Additional care should include patient education about the prevention and management of climate change-related issues.

Conclusions. Climate changes negatively influence patients with heart failure, which implies changes and adjustments in therapeutic strategies and care.