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Cardiotoxicity of cancer therapy: recognition, monitoring, and management of patients with cardiomyopathy

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Introduction: Cardiomyopathies are diseases of the heart muscle that may lead to structural and functional changes in the heart, reduced contractility, cardiac arrhythmias, and the development of heart failure. They may be genetically determined, acquired, or associated with various systemic diseases and harmful factors. Cancer therapy, including certain chemotherapeutic agents, targeted therapies, and immunotherapy, may have adverse effects on the cardiovascular system. Cardiotoxicity refers to cardiac damage caused by anticancer treatment and may manifest as a reduction in left ventricular ejection fraction, the development or worsening of cardiomyopathy, heart failure, arrhythmias, and other cardiovascular complications.[1]

Case report: We present the case of a 67-year-old female patient with acute myocarditis and reduced left ventricular ejection fraction who was undergoing active treatment for right-sided breast cancer with neoadjuvant therapy. Based on the clinical presentation, acute myocarditis secondary to cancer treatment, specifically the administration of an immune checkpoint inhibitor, was suspected. Echocardiography revealed severely impaired global left ventricular contractility, with a left ventricular ejection fraction (LVEF) of 22%. Invasive cardiac assessment ruled out significant coronary artery stenoses. Cardiac magnetic resonance imaging findings were consistent with the previous diagnostic results and supported the diagnosis of myocarditis. During hospitalization, the patient received parenteral therapy and guideline-directed medical therapy for heart failure, resulting in an adequate clinical response and improvement in her condition. During the subsequent hospital stay, she remained hemodynamically and rhythmically stable, with adequate respiratory function and no new symptoms.

Conclusion: The aim of a modern approach to cardio-oncology is not only to achieve successful cancer treatment but also to preserve cardiovascular health and patients' quality of life. Timely prevention, continuous monitoring, and an individualized approach can reduce the risk of serious cardiac complications and enable safer delivery of cancer therapy.

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