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COMMENTARY

Mitigating Cardiovascular Dysfunction Across the Cancer Continuum

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The mechanisms and outcomes of cancer treatment–related cardiovascular dysfunction are complex and influenced by cardiotoxic treatment exposure, preexisting heart disease, and lifestyle factors. Establishing and implementing evidence to prevent, detect, and manage cancer treatment–related cardiotoxicity requires engagement by the nursing science community.

The article "Heart Failure and Long-Term Survival Among Older Women With Breast Cancer" highlights the well-established challenge of multiple chronic conditions in older adults (Harrison et al., 2018). Older adults who have been diagnosed with cancer often have preexisting cardiovascular disease, including heart failure. Although chemotherapies with cardiotoxic side effects are sometimes the best treatment to eradicate the cancer (Levis, Binkley, & Shapiro, 2017), they may exacerbate preexisting heart disease. Patients without preexisting heart disease may incur heart failure from these cardiotoxic treatments through direct effects on cardiomyocytes (Levis et al., 2017). Other contributors, such as the lifestyle factors noted in the study by Harrison et al. (2018), can increase the risk for heart failure among patients with a history of cancer. Each of these diseases is often thought of separately and evaluated in terms of one being diagnosed prior to the other; however, common mechanisms predispose individuals to these and other chronic conditions. Evaluating and targeting these underlying mechanisms for prevention and management strategies may lead to improved cardiovascular and cancer outcomes.

Chronic inflammation is a major contributor to many of these diseases, which are often associated with chronic risk behaviors (e.g., diets high in fat and sugar, smoking, sedentary lifestyle) coupled with environmental and, for some, genetic factors. In fact, 30%–45% of cancer-related deaths are associated with risky lifestyle behaviors alone (Islami et al., 2017; World Health Organization, 2017). Chronic inflammation, in turn, promotes the process of immunosenescence (immune cell aging) (Nikolich-Žugich & Davies, 2017). The integrity of the immune system is critical for the detection and elimination of foreign microorganisms, the arresting of aberrant cell growth, and tissue repair. Cancer formation and progression, particularly among older adults, can be a consequence of chronic inflammation (Oishi & Manabe, 2016). Similarly, chronic inflammation is implicated in cardiovascular disease (Fougère, Boulanger, Nourhashémi, Guyonnet, & Cesari, 2016). With chronic inflammation as an underlying mechanism for cancer, cardiovascular disease, and other conditions (e.g., diabetes, some neurodegenerative diseases), particularly among older adults, the concept of "inflammaging" has emerged (Fougère et al., 2016; Oishi & Manabe, 2016). Inflammaging is the process of chronic inflammation interfering with immune function that, ultimately, leads to increased risk for these chronic conditions. In addition, chronic inflammation can contribute to adverse outcomes among patients undergoing treatment for one or more chronic diseases.

Taken together, the known common co-occurrence of high blood pressure/cardiovascular disease, lifestyle risk factors, and associated chronic inflammation among patients with cancer renders the findings of the Harrison et al. (2018) study unsurprising. About 2% of the U.S. population has heart failure; this figure increases to 12% among individuals aged 80 years or older (Vigen, Maddox, & Allen, 2012). In the analysis by Vigen et al. (2012), among women aged 65 years and older with invasive breast cancer, the rate of heart

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