Cardiotoxicity due to chemotherapy for breast cancer: The dark side of the moon

Despite major advancements in breast cancer therapy, there is a growing awareness of the potentially negative cardiac effects of cancer treatment (1, 2). Indeed, the prevention and management of heart disease in patients with cancer present special challenges to the cardiologist, and even new oncologic treatments may bear the potential for cardiotoxicity. In addition, prolonged survival, as a result of improved cancer therapy, allows persons to live long enough that cardiac toxicity can be the main determinant of quality of life and life expectancy (3). In such a scenario, it is crucial to set up long-standing cooperation between oncologists and cardiologists for the optimal management of patients with cancer (4).

In this issue of the journal, Alıcı et al. (5) build upon such room for fruitful multidisciplinary collaboration. Specifically, they provide additional evidence to this field of research and practice by evaluating the subclinical cardiotoxic effects of chemotherapy based on epirubicin, doxorubicin or trastuzumab, even when given at lower than frankly cardiotoxic dosages (6-8). In addition, they compare tissue Doppler imaging (TDI) with conventional echocardiography for the assessment of left ventricular function and thus inform us on the relative strengths and weaknesses of both imaging modalities. In particular, they highlight that chemotherapy commonly affects, albeit subclinically, left ventricular systolic and diastolic functions and that these effects are more pronounced in patients who receive multiple or combination chemotherapy regimens. Despite the fact that B mode and color Doppler echocardiography are the mainstays in the diagnostic and prognostic work-up of patients undergoing chemotherapy (4), Alıcı et al. (5) also show that TDI provides more precise data on early and late changes in left ventricular function. Finally, parameters of diastolic function are also often changed early on in patients receiving antineoplastic agents, and TDI is more sensitive than conventional Doppler-echocardiography in evaluating diastolic function in such less-than-evident settings.

Given these findings and the remaining evidence base (1, 9), it is clear that conventional echocardiography and TDI are going to be of ever increasing importance in patients undergoing potentially cardiotoxic chemotherapy. Yet, the routine monitoring and assessment of cardiotoxicity may include several other diagnostic tools to evaluate the impact of chemotherapy drugs and radiotherapy on cardiac function, such as speckle tracking, two-dimensional strain imaging, and three-dimensional echocardiography, which may offer lower temporal and observer variability for the early detection of cardiac damage (1). Magnetic resonance imaging could also provide data on myocardial anatomy and hemodynamics, but it has not been applicable in large series for several reasons, including expense and expertise (10).

While the optimal management of patients with or at risk for cardiotoxicity is still debated, antiapoptotic agents or drugs with established favorable pleiotropic effects are likely going to be beneficial, at least when selectively used (11-13).

In conclusion, the established cardiotoxicity of several chemotherapy regimens has meant the birth of the new discipline of cardioncology, with seminal works, such as the present one by Alıcı et al. (5), key in improving our understanding, guiding us in the optimal management of patients undergoing potentially cardiotoxic oncologic treatments.

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