Selection of the Best of 2017 on Cardio-oncology. What Should We Know?

Selección de lo mejor del año 2017 en cardio-oncología. ¿Qué debemos saber?

To the Editor,

Over the last decade, interest in the field of cardio-oncology has grown, due to the increased survival in patients with cancer and the impact of cardiotoxicity on their prognosis. The role of the multidisciplinary team is key when approaching the challenge of delivering the best anticancer treatment without interruption and with the fewest events possible. This objective prompted the publication of the consensus document of the Spanish Society of Cardiology, the Spanish Society of Medical Oncology, the Spanish Society of Radiotherapy and Oncology, and the Spanish Society of Hematology and Hemotherapy (Spanish acronyms: SEC-SEOM-SEOR-SEHH). The document summarizes simple strategies for the monitoring, prevention, and treatment of cardiovascular complications caused by anticancer treatments, and the long-term follow-up of survivors,[1] topics that have sparked strong interest in the literature in the past year.10.1016/j.recesp.2017.09.01610.1016/j.recesp.2017.09.016

Several studies have confirmed the diagnostic and prognostic role of imaging techniques, in particular global longitudinal strain, in the monitoring of cardiotoxic-induced ventricular dysfunction (Tox-VD). Narayan et al.[2] prospectively analyzed the echocardiographic changes in left ventricular structure and function in 277 women with breast cancer treated with doxorubicin or trastuzumab, with a median follow-up of 2 years. The presence of early changes in myocardial deformation and arterial elastance were associated with both deterioration in ventricular function and the presence of symptomatic heart failure (HF) at follow-up. Charbonnel et al.[3] assessed myocardial deformation as a predictor of cardiotoxicity in 86 hematology patients treated with anthracyclines. Seven percent of the study population developed Tox-VD, and a global longitudinal strain volume $< -17.45\%$ after a cumulative anthracycline dose of 150 mg/m^2 was the best predictor of Tox-VD, with a sensitivity of 67% and a specificity of 96%.

Thoracic radiotherapy (RT) is a risk factor for HF in patients with Hodgkin lymphoma and breast cancer. Saiki et al. demonstrated that older women (median age, 69 $\pm$ 9 years) who had received contemporary RT for breast cancer had a higher risk of HF, which directly correlated with the length of follow-up and the mean cardiac radiation dose (MCRD). Even an MCRD of < 1 Gy increased the risk of HF after adjustment for other risk factors and tumor stage. A total of 89% of patients with HF (5.8 $\pm$ 3.4 years after RT) had a preserved or mildly reduced ($\geq$ 40%) left ventricular ejection fraction. The authors suggest that coronary microvascular damage was the most likely mechanism, as only 18.6% of the patients had associated ischemic events.[4] Active smoking may cancel out the net beneficial effects of RT in breast cancer survival, as it increases cardiac mortality and the risk of lung cancer secondary to RT.[5]

These findings highlight the need to optimize risk factor control and reduce MCRD with breathing-adapted RT, protocols with dose modulation or cardiac atlas design that allow calculation and optimization of the radiation dose received by each cardiac structure, in particular the critical segments such as the proximal left anterior descending artery. The BACCARAT study (BreAst Cancer and CArdiotoxicity Induced by RAdioTherapy; NCT02605512) was designed based on cardiac biomarkers and imaging techniques, to study the mechanisms of RT damage on the heart and predict and avoid potential damage.

The published figures on cardiovascular events in long-term survivors warn of the need to implement cardiovascular prevention and monitoring of these patients. In the series published by Fidler et al.[6] (34 489 survivors of childhood cancer with an age at diagnosis < 15 years and a mean follow-up of 18 years), cardiac mortality was 3.4 times higher than the expected rate in the general population and increased with age, even after 60 years. The risk of death from ischemic heart disease was 2.4 times higher and was particularly marked in survivors of Wilms tumor and Hodgkin lymphoma. Deaths due to cardiomyopathy/HF were 5.9 times more frequent than in the general population, and survivors of acute myeloid leukemia, non-Hodgkin lymphoma and Wilms tumor had the greatest risk. Children treated in the 1980s were significantly more affected than those treated before or after, probably due to the widespread use of high-dose anthracyclines. In subsequent decades, this pattern improved, indicating that the introduction of cardioprotective measures (such as limiting the cumulative dose and enhancing early surveillance and treatment) has had a significant impact. In patients older than 60 years, cardiovascular disease was responsible for 37% of excess deaths, higher than the 31% caused by second primary neoplasms.

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