

## Chemotherapy for Cancer: Good and Bad News

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The good news: oncologists have improved early detection and treatment of cancer, reducing mortality and prolonging disease-free survival. The bad news: cardiotoxicity is much higher than previously reported, and this is the main cause of mortality in cancer survivors. Aiello et al. recently reported a cumulative incidence of heart failure of 20.1%, 5 years after anthracycline and trastuzumab treatment (1). This incidence is eight times higher than the 2.5% previously reported in mega-trials (2). Acknowledging that heart failure is the most common cause of death in cancer survivors, it is then necessary to find strategies for its early identification and aggressive treatment. Ejection fraction has been traditionally used for left ventricular function assessment in these patients. However, as shown in a recent publication from our center, 2D echo could only detect ejection fraction changes > 10 points in a longitudinal follow-up of patients undergoing chemotherapy, improving to 6 points with 3D echo. (3)

The problem is that, even with more advanced tools such as 3D echo, once toxicity is recognized due to a decreased ejection fraction, it is too late. The aim is then the early detection of myocardial damage. In this issue of the Argentine Journal of Cardiology, Baratta et al (4) reported the results of their study evaluating the role of deformation parameters and biomarkers in the early identification of toxicity.

The approximately 20% incidence of toxicity is equivalent to that previously reported by our center. The optimal cut-off point is somewhat higher than the 12% recommended by us. (5) However, the most important finding of this study is the increased BNP and NT-proBNP levels during the fourth month, which are predictive of subsequent heart failure. It is important to remember that BNP and NT-proBNP increase once left ventricular filling pressures have increased.

Based on this study we can then postulate that the first manifestation of toxicity is longitudinal strain anomaly, which due to the progressive deterioration of myocardial function and no pharmacological intervention results in elevated intracavitary pressures. Thus, changes in longitudinal strain should be adjudicated as stage B heart failure with deformation anomaly, and immediate cardioprotective therapy

should be started to prevent progression to elevated intracavitary pressures and the clinical syndrome of heart failure.

It is important to admit that in the group without toxicity, 24.1% of patients received angiotensin converting enzyme (ACE) inhibitors. Probably these patients had indications for receiving ACE inhibitors other than simple cardioprotection. It is interesting to note that none of these patients developed toxicity, and conversely, no patient who developed toxicity had received these agents.

The strategy then is to move into the future with optimism, considering two possible alternatives to the problem of cardiotoxicity: the first one is that the new understanding of the pathophysiology of toxicity allows primary prevention with medications such as dexrazoxane, or a second one that accepts early identification with strain and markers, prompting cardioprotective treatment. Cardinale had previously shown the presence of a window of opportunity to revert toxicity (6). Our group has published two studies demonstrating the cardioprotective role of two agents in these patients: beta-blockers and statins (7, 8). We are looking forward to results that show us which strategy is right to prevent the development of heart failure in patients who have been treated for cancer.

### Conflicts of interest

None declared

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