JACC: CardioOncology: Study questions the value of intensive cardiac surveillance in cancer patients treated with anthracyclines

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The findings suggest that a risk-based personalized approach may be more efficient than applying intensive surveillance protocols uniformly to all patients.

A study led by investigators at the Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC) suggests that intensive cardiac surveillance programs routinely applied to lymphoma patients with low to moderate cardiovascular risk who are treated with anthracyclines may have limited clinical value.

The results of the MATRIX study, published in *JACC: CardioOncology*, show that monitoring with cardiac magnetic resonance imaging, advanced echocardiography, and cardiac biomarkers identified only mild subclinical abnormalities that did not translate into clinically meaningful cardiovascular events during the months of follow-up after treatment.

The MATRIX project (Novel mitochondria-targeted therapies for cancer treatment-induced cardiotoxicity) is developing innovative new therapies for the cardiac toxicity associated with certain cancer treatments. MATRIX was funded by the European Commission through an ERC Consolidator Grant led by Dr. Borja Ibáñez, CNIC Scientific Director, cardiologist at Hospital Universitario Fundación Jiménez Díaz, and a group leader in the Spanish cardiovascular research network (CIBERCV).

Anthracyclines are among the most effective treatments for many hematological malignancies, especially lymphomas. However, their use can be associated with cardiac toxicity, which is why clinical guidelines recommend cardiovascular surveillance programs during and after treatment.

Nevertheless, most of these recommendations are based on expert consensus, and there is limited evidence about their real-world utility in patients with low to intermediate cardiovascular risk. “The aim of this study was to answer a highly relevant clinical question: whether intensive cardiac surveillance provides clinically useful information in patients at low risk of developing cardiotoxicity,” explains Dr. Andrea Moreno-Arciniegas, first author of the study, a CNIC investigator and cardiologist at Hospital La Luz.

MATRIX included 44 patients with newly diagnosed lymphoma who were scheduled to receive anthracycline-based chemotherapy. All participants underwent comprehensive cardiovascular assessment with cardiac magnetic resonance imaging, echocardiography, and measurement of cardiac biomarkers before, during, and after treatment.

The investigators found that nearly half of the patients met the current European guideline criteria for cancer therapy–related cardiac dysfunction. However, this proportion fell substantially when certain blood biomarkers were excluded from the definition. Moreover, most of the abnormalities detected were mild, transient, and non-progressive.

“What we observed is that many of the abnormalities identified through intensive surveillance programs were not associated with adverse clinical outcomes during follow-up,” says Dr. Sandra Gómez-Talavera, a CNIC investigator, cardiologist at Fundación Jiménez Díaz, and coauthor of the study.

The authors also found that a substantial proportion of biomarker elevations were already present before chemotherapy was initiated and tended to normalize over time, suggesting that they may reflect processes related to the underlying cancer or systemic stress rather than progressive cardiac injury.

The findings support the need to tailor the intensity of cardiac follow-up to the individual risk profile of each patient.

“**These findings suggest that a personalized, risk-based approach may be more efficient than applying intensive surveillance protocols uniformly to all patients**,” explains Dr. Borja Ibáñez, the study leader.

According to the investigators, early identification of cardiotoxicity remains a clinical priority, but the results indicate that it is necessary to optimize the balance between early detection, clinical benefit, and healthcare resource utilization.
"We need larger studies with longer follow-up periods to determine which subclinical findings truly have prognostic relevance and which patients benefit most from intensive surveillance," adds Dr. Teresa López-Fernández, cardiologist at Hospital Universitario La Paz in Madrid, Director of the Cardio-Oncology Section of the European Society of Cardiology, and coauthor of the study.

The authors acknowledge that the results should be interpreted with caution due to the relatively small cohort size and limited follow-up duration. Nevertheless, they believe the findings provide valuable information for future updates of cardiovascular surveillance strategies in oncology patients.

MATRIX is a prospective study funded by the European Commission. The work was carried out by investigators from the Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC), Fundación Jiménez Díaz, the Spanish cardiovascular research network (CIBERCV), Hospital Universitario La Paz, and international collaborators.

The CNIC, through its Myocardial Homeostasis and Cardiac Injury Program, investigates the cardiovascular toxicity of cancer treatments, with a particular focus on anthracycline-induced cardiac damage, with the aim of developing effective and safe therapies. Dr. Ibáñez's group leads European projects such as the ERC Consolidator Grant **"MATRIX"** and the Horizon 2020 Health project **"RESILIENCE"**, in collaboration with the Fundación Jiménez Díaz University Hospital and the CIBERCV, to reduce the incidence of heart failure among cancer survivors.

- *Moreno-Arciniegas A, Gómez-Talavera S, Navarro-Guzman A, Galán-Arriola C, Ramos-Cillán S, Morillo D, Pardo L, Pérez-Sáenz MA, Córdoba R, Mass V, Escalera N, Fuster V, López-Fernández T, Sánchez-González J, Ibáñez B. Cardiac Surveillance for Anthracycline Cardiotoxicity: Clinical Yield in Low-to-Intermediate Risk Patients: MATRIX Study. JACC CardioOncol. 2026;8(3):318-320. doi:10.1016/j.jaccao.2026.04.003.*

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