**Efficacy of Cardioprotective Drugs in Cancer Patients Receiving Anthracyclines: A Pairwise Meta-Analysis and Network Meta-Analysis**

Maisha Maliha, MBBS1,2, Amrin Kharawala, MBBS3, Vikyath Satish, MBBS1,2, Sriram Sunil Kumar, MBBS1,2, Nidhish Tiwari, MBBS3, Lili Zhang, MD2,4

1. New York City Health and Hospitals Corp/Jacobi Medical Center, Bronx, New York
2. Albert Einstein College of Medicine, Bronx, New York
3. University of Nebraska Medical Center, Omaha, Nebraska
4. Montefiore Medical Center, Bronx, New York

**Background:**

Anthracyclines are a key component of chemotherapy for various cancers, but they increase the risk of cardiotoxicity. This study evaluated the cardioprotective effects of drugs in patients undergoing anthracycline-based chemotherapy through a network meta-analysis.

**Methods**:

Four electronic databases (PubMed, Cochrane, Scopus, Web of Science) were searched up to August 19, 2024, for randomized clinical trials and cohort studies. The primary outcome was the change in left ventricular ejection fraction (LVEF), while secondary outcomes included changes in diastolic dysfunction composing of (i) E/A ratio, (ii) left ventricular end diastolic volume(LVEDV) and (iii) left ventricular end diastolic diameter(LVEDD); incidence of cancer therapy related cardiac dysfunction (CTRCD); heart failure (HF) incidence and hospitalization, and all-cause mortality.

**Results**:

Of 34 studies, the meta-analysis showed cardioprotective agents significantly increased LVEF and reduced CTRCD risk, all-cause mortality, HF incidence and LVEDD. However, no significant differences were seen in the E/A ratio, LVEDV, or HF hospitalization. ACE inhibitors (ACEIs), beta-blockers, and statins were most effective in preserving LVEF and reducing CTRCD, with ACEIs ranking highest. SGLT2 inhibitors (SGLT2i) significantly reduced mortality.

**Conclusion**:

The use of cardioprotective drugs can improve morbidity and mortality in patients receiving anthracyclines. Further large-scale studies are required to explore the effects of SGLT2i on LVEF and address the potential biases in observational studies.

.

