Identifying the Incidence of Trastuzumab-Induced Cardiotoxicity at a "Real World" Tertiary Care Centre

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Abstract

Background Care for human epidermal growth factor receptor-2 (HER2) positive patients is the combination of adjuvant chemotherapy and trastuzumab. While trastuzumab is well-tolerated, there are risks of cardiotoxicity. A meta-analysis reported that less than 5% of HER2+ breast cancer patients will develop trastuzumab-induced cardiotoxicity (TIC). Observational data suggest that incidence is much higher. We aimed to determine the incidence, time to development, and risk factors associated with TIC among less selected breast cancer patients treated in a "real world" tertiary care centre.

Methods A retrospective cohort study was carried out in 160 consecutive HER2+ breast cancer patients who received adjuvant chemotherapy with trastuzumab from January 2006 to June 2014 at St. Michael's Hospital, Toronto. Patient demographics, cardiovascular history and TIC were recorded. TIC was defined as symptomatic (eg. heart failure) or asymptomatic (eg. cardiomyopathy, decline in left ventricular ejection fraction (LVEF) ≥10% or LVEF ≤50%). Cardiac monitoring was performed using serial Multi Gated Acquisition Scan (MUGA) every 3 months.

Results Of the 160 patients (median age 52 [IQR: 45-60], baseline LVEF 62.5% [IQR: 58-67%]), 34 patients (21.3%) experienced TIC (median follow-up 55.4 months). Less than 5% of the patients had a history of heart failure, or myocardial infarction at baseline. The median time to development of TIC was 30.4 weeks during trastuzumab therapy. Patients with TIC did not differ from those without in cardiovascular risk factors, radiotherapy, neoadjuvant or adjuvant treatment. Those with TIC were more likely to have undergone a mastectomy (52.9% vs 33.3%, p=0.04). However, after adjusting for anthracycline-based chemotherapy, and radiation to the breast, mastectomy was not independently associated with TIC (HR=2.02; 95% CI=0.88, 4.63).

Conclusion The incidence of TIC is higher in our "real world" population compared to clinical trial data. The median time to development of TIC was 30 weeks, approximately the 10th treatment of trastuzumab. As the number of cancer patients rise, timely identification and management of patients is important to avoid irreversible cardiac toxicity and prolong overall survival.

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