Abstract: **P311**

**Morpho-functional myocardial alteration during trastuzumab therapy: anything beyond cardiotoxicity?**

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**Topic(s):**
Tissue Doppler, Speckle Tracking and Strain Imaging

**Citation:**

Background: Trastuzumab (TZ) has a primary role in the therapy of HER-2 positive breast cancer but has potential negative effect on left ventricular (LV) function that define cardiotoxicity (CT). Decrease in LV longitudinal strain (GLS) and in left atrial (LA) function observed by peak atrial longitudinal strain (PALS), besides LA remodeling, has already been described as predictors of TZ-related CT. However these parameters haven’t been observed together and regardless of CT.

Purpose: to describe overall atrial and ventricular morpho-functional variations during TZ therapy.

Methods: HER-2 positive metastasis-free breast cancer patients referring to our Echo-lab were prospectively recruited. Trans-thoracic echocardiography was performed before starting TZ and every 3 up to 12 months. LV volumes and ejection fraction (LVEF), indexed LA volume (LAVI), LA deformation parameters, and multiple diastolic parameters were collected. 2D-Speckle tracking analysis was performed at baseline and at each examination using Philips’ QLAB software.

Results: Eligible patients were 64. 53 of these (82,8%) had a complete follow-up at 12 months and were included in the analysis. 42 patients (79,3%) were treated with both TZ and anthracyclines. During follow-up CT occurred in 7 patients (10,9%). Mean baseline parameters were: age 54 ± 13 years, LVEF 63,3 ±3,2%, GLS -21,2 ± 2,1%, LAVI 24,4 ±6,9 ml/mq, peak atrial contraction strain (PACS) 22,9 ±6,5%, PALS 51,1 ± 11,5%. Deformation analysis was feasible in 95% of patients. None of the echocardiographic parameters regarding diastolic function and LV volumes showed significant variations.

Analyzing overall populations data during the 1 year of follow-up, we reported a decrease trend of GLS (p for time <0.0001) with an early drop during the first 6 months of TZ therapy with a subsequent "plateau" phase, and a reduction of LVEF over time (p for time <0.0001) with a continuous gradual decrease for the whole follow-up (but still within the normal value span). On top LA functional parameters showed a decreasing trend: PALS (p for time <0.0001) and PACS (p for time <0.0001) showed both decrease trend since the first months of therapy, lasting for the entire follow-up. Also we reported a notable LAVI dilation during the first 6 months of TZ therapy (p for time <0.0001) followed by a plateau phase, and combining LAVI and PALS (LAVI/PALS) we noted an increase trend (p for time <0.0001). These data are showed in Figure I.

Conclusions: Our results suggest that deformation analysis is useful to study LV and LA functional remodeling during TZ therapy. Actual recommendations for the identification of CT are based upon a joint evaluation of LVEF and GLS, but our study show significant variations of other morpho-functional parameters regardless of CT. These changes could be used as indicators of subclinical damage involving the entire heart and the analysis of different deformation indexes could improve the early detection of CT.
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