Assessment of treatment with Carvedilol in preventing early stage left ventricular dysfunction in breast cancer patients by 2D speckle tracking echocardiography.

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Background/Introduction: Treatment-induced cardiotoxicity (TIC) is one of major side effects of trastuzumab treatment in breast cancer patients. Left ventricular (LV) dysfunction is the leading cause of TIC. Development of TIC during cancer treatment may force patients to modifications or withdrawing the treatment.

Purpose: In this trial we evaluated the prophylactic effect of carvedilol on LV dysfunction in breast cancer patients receiving trastuzumab using 2D speckle tracking echocardiography (2DSTE).

Methods: We conducted open label randomized clinical trial (RCT) and enrolled 71 non-metastatic HER-2 positive breast cancer patients whom were candidate to receive trastuzumab. Carvedilol was administered concomitantly with trastuzumab standard regimen with dosage of 6.25 mg twice a day and up titrated to maximum tolerated dosage. Speckle tracking echocardiography parameters to evaluate left ventricular systolic and diastolic function were evaluated initially and 3 months thereafter. Results: Thirty six patients were randomly assigned to carvedilol group and 35 patients to control group. Mean LV ejection fraction (LVEF) didn’t significantly different in both groups either between two groups (p=.61) during follow-up. In contrast, global longitudinal strain of LV (GLS) (p=.000) and strain rate of LV systolic function (SRS) (p=.004)-as marker of LV systolic function- were reduced in control group. Furthermore, LV strain rate of early (SRE) and late (SRA) diastolic function were preserved in patients received prophylactic carvedilol, p=.000 and p=.005 respectively. Conclusion: concomitant carvedilol treatment with maximum tolerable dose in patients with nonmetastatic HER2 positive breast cancer under treatment trastuzumab might be effective on reduction of systolic and diastolic echocardiography findings other than LVEF in patients with weak markers of heart failure.