Impact of cardiovascular therapy on left ventricular function in her2 positive breast cancer patients who were treated with trastuzumab

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Background: Trastuzumab prolongs survival in women with HER2-positive breast cancer, but carries the risk of cardiotoxicity. Cardiac function should be closely monitored, as well as identification of the patients (pts) with risk of cardiotoxicity.

Purpose: To assess the impact of cardiovascular therapy on the echocardiographic parameters of left ventricular function in patients with HER2 positive breast cancer during trastuzumab therapy.

Methods: 96 pts with HER2 positive breast cancer (mean age, 59.57 ± 9.6 years) were studied. All pts were on sequential therapy with anthracyclines (IV to VI cycles) within the FAC regimen (fluorouracil 500 mg/m2, doxorubicin 50 mg/m2, cyclophosphamide 500 mg/m2) on day 21, and after that trastuzumab therapy (6 mg/kg of body weight on day 21, for the period of one year). The echocardiographic parameters: left ventricular ejection fraction (LVEF%), fractional shortening (FS%), end-diastolic diameter (EDD, mm); left ventricular mass (LVM, g) were assessed at the beginning and after the therapy with trastuzumab in all pts.

Out of 96 studied pts, 44 pts (45.85%) were treated with beta-blockers, 35 pts with ACE inhibitors (36.45%), 12 pts (12.5%) with calcium antagonists and 5 pts (5.2%) with sartans.

Results: At the end of trastuzumab therapy patients who were on beta-blockers therapy, showed the reduction of LVEF by 3.28% (p = 0.005), while patients on ACE inhibitors (by 2.80%; p = 0.016) and calcium antagonists (by 2.80%; p = 0.012) had the lowest decrease in LVEF. Patients on sartans therapy showed decreased of LVEF by 4.76% (p = 0.461) compared to baseline values.

Patients on beta-blockers had the lowest decrease of FS (0.68%; p = 0.448) while the highest decrease of FS had patients on calcium antagonist therapy (3.05%, p = 0.022). The highest increase in EDD (by 3.28 mm; p = 0.194) was detected in pts on sartans therapy. In patients on beta-blockers therapy, there was an increase in LVM by 16.36 g (p = 0.012). The highest increase in LVM (by 17.56 g, p = 0.141) was observed in patients on sartans therapy.

Conclusion: The results of our study showed that after trastuzumab treatment in patients with HER2 positive breast cancer, the least reduction of LVEF was in pts who were on therapy with ACE inhibitors or calcium antagonists, while the least decrease in FS was in pts on beta-blockers therapy. The highest increase in EDD and LVM was in patients who were on sartans therapy.