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Assesment of cardiac function during trastuzumab therapy in HER2 positive breast cancer patients

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Background: Although trastuzumab has benefits in treatment of HER2 positive breast cancer, it also carries the risk of cardiotoxicity. It is very important to evaluate the cardiac status before and after therapy with trastuzumab, as well as monitoring of electrocardiographic and echocardiographic parameters.

The aim of this study was to assess of cardiac function during trastuzumab therapy in HER2 positive breast cancer patients.

Method: Ninety six HER2 positive female breast cancer patients (mean age, 59.57 ± 9.6 years) were enrolled in the study. At the time, they 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 22, and after that trastuzumab therapy (6 mg/kg of body weight on day 21, for the period of one year). In all patients (pts) blood pressure (BP), heart rate (HR), electrocardiographic and 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.

Results: There was no significant changes in arterial BP before and after trastuzumab in examined pts (systolic BP 119.90 ± 16.04 mmHg vs 121.30 ± 13.06 mmHg; diastolic BP 75.89 ± 7.25 mmHg vs 76.30 ± 7.65 mmHg) ns and HR (68.78 ± 7.69 /min vs 67.92 ± 7.90 /min) ns. All pts at the beginning and after the last therapy with trastuzumab on the electrocardiogram (ECG) were in sinus rhythm, one pts has LBBB and one RBBB. During therapy ectopic beats were registred in 11 pts, SVES in 7 (7.29%), VES in 4(4.16%). In the most of this patients with PSR in the middle of treatment period with trastuzumab sinus tachycardia was recorded as well. At the end of trastuzumab therapy in examined group LVEF was decreased by 1.73% (from $65.49 \pm 5.82\%$ to $63.76 \pm 6.43\%$; $p = 0.007$), FS by 0.86% (from $36.18 \pm 5.10\%$ to $35.32 \pm 4.91\%$; $p = 0.123$) ns, EDD increased by 1.26 mm (from 47.53 ± 4.48 mm to 48.80 ± 5.19 mm; $p = 0.005$) and LVM increased by 173.68 g (from 161.55 ± 43.76 g to 171.15 ± 47.88 g; $p = 0.031$). Cardiotoxicity is registred in 4 (4.17%) patients, according to the criteria of EACVI and ASE.

Results: Tratsuzumab has not significant effect on BP and ECG changes. The rate of cardiotoxicity after trastuzumab therapy was low and was expressed through reduction of left ventricle ejection fraction, the increase in the end-diastolic diameter and the left ventricular mass.