

Trastuzumab and ECG Changes Dilemma

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Editorial

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Trastuzumab (Herceptin) is a humanized monoclonal antibody that targets the human epidermal growth factor receptor 2 (HER2)¹. Trastuzumab is important in the treatment of HER2+ breast cancer, gastric, and colorectal carcinoma².

One of the known side effects of Trastuzumab is cardiotoxicity. The most important cardiac complications of trastuzumab in previous studies included asymptomatic left ventricle dysfunction or symptomatic heart failure³.

Periodic electrocardiographic assessment is recommended in patients receiving trastuzumab. The ECG changes that have been reported in patients treated with Trastuzumab in studies so far include new negative T-waves in ECG, ventricular bigeminal rhythm, changes in the T-wave or ST-segment (depression or elevation), Unspecified arrhythmias, sinus bradycardia, asymptomatic left bundle branch block (LBBB), asymptomatic right bundle branch block (RBBB), atrial fibrillation (AF) and non-sustained ventricular tachycardia (VT)⁴⁻⁶.

Patients, who are candidates for trastuzumab, range from who had no risk factor for cardiac diseases to Patients with cardiac risk factors or previous heart diseases. In patients who need to receive Trastuzumab, cardiac examinations including ECG and transthoracic echocardiography are performed

before starting treatment and are repeated at least every 3 cycles according to the Cardio-Oncology Guidelines⁷. Most patients who are candidates for HER2 Inhibitors are candidates for initiating cardio protective treatment with angiotensin-converting enzyme inhibitor(ACEi), or angiotensin receptor blocker(ARB) and β -blocker(BB) as primary prevention especially in high-risk patients. Especially including patients exposed to multiple cardiotoxic agents or previous cardio toxic drugs and patients with cardiovascular risk factors (age \geq 60, mediastinal radiotherapy, previous heart disease, smoking, hypertension, diabetes, dyslipidemia, chronic renal insufficiency, and obesity)⁷⁻⁹.

For these patients, we start with low-dose beta-blocker and ACEi/ARB and gradually titrated the dose according to the patient's tolerance based on heart rate, blood pressure and renal function

Due to the positive cardiac protective effects of statins in patients with HER2-Positive breast cancer receiving trastuzumab therapy in clinical trial¹⁰ we start high-dose statin (if the patient tolerates and there is no contraindication) in diabetic patients, hyperlipidemia and patients with a history of previous heart diseases and low-dose statin in patients with other cardiac risk factors.

Some of our patients who are being treated with trastuzumab and had normal ventricular function in echocardiography Showed nonspecific changes in

the ECG, which was often in the form of nonspecific ST-T wave changes in the precordial leads. But sometimes the ECG changes showed a deep T invert and significant ST depression in precordial leads which can mimic ischemia. These ECG changes usually happen after the fifth or sixth cycles.

We evaluated these patients in terms of ischemia with Gated Technetium-99m-Sestamibi SPECT or Stress echocardiography. No evidence in favor of ischemia was found in these modalities in these patients. These patients had no other evidence of ischemia, including chest pain, shortness of breath, or regional wall motion abnormalities and LVEF was normal.

These findings can be a guide that patients treated with Trastuzumab may undergo these important ECG changes and paying attention to this issue -of course with careful notice of clinical and echocardiographic data- can eliminate many unnecessary diagnostic assessments in these patients.

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