

## Electrocardiographic evaluation of depolarization and repolarization abnormalities in breast cancer patients with HER2-inhibitor related cardiac dysfunction

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**Background:** The arrhythmic substrates of the myocardium such as depolarization and repolarization abnormalities are thought to reflect cardiac dysfunction prior to the morphologic left ventricular dysfunction. Activation time (AT), recovery time (RT) and T wave peak-end interval dispersion (Tpe-dispersion) are useful indicators of the arrhythmic substrate. We examined the appearance of depolarization and repolarization abnormalities in patients with cancer therapeutics-related cardiac dysfunction (CTRCD) using AT, RT and Tpe-dispersion.

**Methods:** We conducted a standardized case-control study of CTRCD with 40 patients who developed breast cancer and treated with trastuzumab (13 cases and 27 controls). We assessed the relation between electrocardiographic indexes, including AT, RT and corrected Tpe-dispersion, and CTRCD. QT intervals were measured by Fridericia method, and QT ob-

server 3 software were used for the measurement of all electrocardiographic indexes.

**Results:** LVEF in case and control group were 45.7±8% and 69.2±6%, respectively. AT in aVR lead was significantly higher in case group compared with control (28.8±7ms vs 22.8±5ms, P=0.02). corrected Tpe-dispersion tended to be higher in case group than that of control group (43.2±19ms vs 31.9±10ms, P=0.06). QT dispersion and RT dispersion were not different between case and control group.

**Conclusions:** Our study demonstrated that AT in aVR may predict cardiac dysfunction in breast cancer patients with HER2-inhibitor related cardiac dysfunction. More detailed studies using other modalities which can detect depolarization and repolarization abnormalities, including ventricular late potentials and T wave alternans, are needed.