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Cardiac Magnetic Resonance Imaging Findings in Human Epidermal Growth Factor Receptor 2-Targeted Therapy-Related Cardiotoxicity

E-PAGE ORIGINAL IMAGE

A 41-year-old female with human epidermal growth factor receptor 2 (HER2) (+) metastatic breast cancer was admitted due to exertional dyspnea and othopnea. She had received 3 cycles of the combination of paclitaxel, trastuzumab, and pertuzumab, and her past medical history was unremarkable. Physical examination revealed bilateral crackles at the lower lung zones and S3 sound with pansystolic 3/6 murmur at apex. Electrocardiogram was consistent with sinus tachycardia (110 bpm) and loss of R wave progression. Her blood tests were all normal, except for the increased levels of BNP (216 pg/mL). Echocardiographic evaluation yielded a reduced left ventricular ejection fraction (LVEF = 20%) and severe mitral and tricuspid regurgitation. Coronary angiography was performed after decongestive treatment. Coronary arteries were normal, and cardiac magnetic resonance imaging (MRI) showed myocardial edema and pericardial effusion. Extracellular volume (ECV) was also increased (Figure 1). Septal epicardial late gadolinium

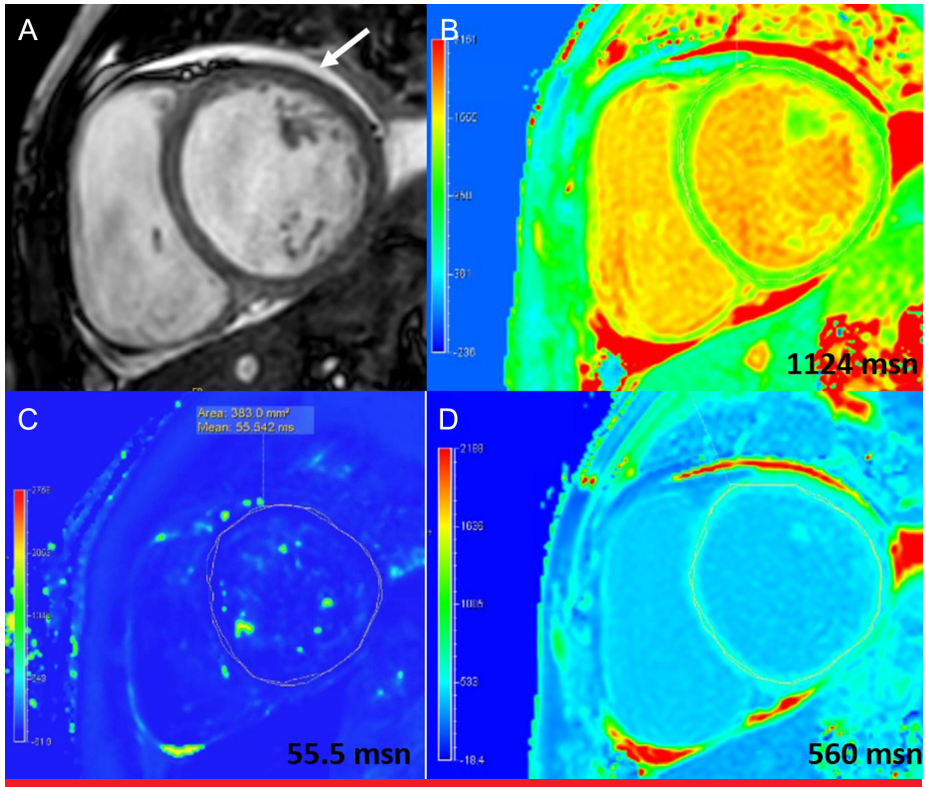

Figure 1. Short-axis balanced Steady State Free Procession (bSSFP) cine image shows left ventricular dilatation and minimal pericardial effusion (white arrow) (A). Short-axis native T1 (B) and T2 map (C) shows elevated myocardial T1 and T2 values consistent with myocardial edema. Extracellular volume values obtained from pre- (B) and post-contrast (D) T1 maps were also increased up to 32%.

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Figure 2. Epicardial linear late gadolinium enhancement (red arrow) in post-contrast image suggests myocardial fibrosis.

enhancement (LGE) was established (Figure 2). Guideline-directed medical treatment for heart failure was started, and LVEF was improved up to 50% during follow-up.

HER2-targeted therapies cause cardiotoxicity which usually recovers after cessation of the drug. Diagnosis is based on the temporal relationship between the drug administration and symptom onset, after excluding the other causes of heart failure.[1] Cardiac MRI has an important role in differential diagnosis of myocardial diseases; however, there are scarce data about the MRI findings of HER2-targeted therapy-related cardiotoxicity. Presence of epicardial LGE in HER2-targeted therapy-related cardiotoxicity was reported before.[2] We also detected increased T1, T2, and ECV values in our case that should be evaluated in further studies.

Informed Consent: Written informed consent was obtained from the patient.

Declaration of Interests: The authors declare no conflict of interest.

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