Takotsubo Cardiomyopathy Mimicking Acute Coronary Syndrome — Extracellular Volume Quantification Using Cardiac Computed Tomography —

Daisuke Sueta, MD, PhD; Seitaro Oda, MD, PhD; Eiichiro Yamamoto, MD, PhD; Masato Nishi, MD; Koichi Kaikita, MD, PhD; Masafumi Kidoh, MD, PhD; Daisuke Utsunomiya, MD, PhD; Takeshi Nakaura, MD, PhD; Yasuyuki Yamashita, MD, PhD; Kenichi Tsujita, MD, PhD

Cardiac computed tomography (CT) has recently been used in non-coronary applications, including myocardial tissue characterization such as myocardial late enhancement and extracellular volume (ECV) quantification.

A 67-year-old woman was admitted to hospital because of atypical chest pain. Electrocardiogram showed elevated ST segments in leads V1–V3, and transthoracic echocardiography indicated apical wall akinesis. Although she was presumed to have takotsubo cardiomyopathy (TC), it was necessary to exclude acute coronary syndrome. Immediate cardiac CT for the assessment of coronary arteries showed no coronary artery stenosis (Figure A). Cardiac function analysis showed apical hypokinesis (Figure B, arrows). Delayed-phase imaging demonstrated no myocardial late enhancement lesions (Figure C), but myocardial ECV was notably high in the apex (Figure D–F, arrows), which did not contradict the diagnosis of TC, and myocarditis was clinically excluded. Next, cardiac magnetic resonance imaging (CMR) showed myocardial edema in the mid-apical segments on T2-weighted black blood imaging (Figure G). Although no myocardial late enhancement lesion was visualized (Figure H), native T1 on T1 mapping (Figure I) was significantly elevated in the mid-apex. The CMR findings were similar to those of cardiac CT, which may have resulted from myocardial edema at the apex. The patient was eventually diagnosed with TC. One month later, follow-up echocardiography showed that the apical wall had improved.

To the best of our knowledge, this is the first report to describe the use of myocardial ECV imaging on cardiac CT in a patient with TC. We believe this technology can support prompt clinical decision-making for patients with TC.

Disclosures
The authors declare no conflicts of interest.

References