spontaneous coronary artery dissection (SCAD) is an unusual cause of acute coronary syndrome.1 SCAD is often diagnosed on intravascular ultrasound (IVUS) and optical coherence tomography2–4 and is followed over time using computed tomography angiography (CTA), a less invasive imaging modality.5 Here we present representative magnetic resonance imaging (MRI) of SCAD. This is the first demonstration of the utility of MRI for longitudinal follow-up. We also document non-contrast T1-weighted (T1W) MRI signal changes in an intramural hematoma.

A 42-year-old leptosomic woman with a body mass index of 15.2 was transferred to the emergency department due to chest pain. Her sole risk factor for coronary artery disease was smoking. On admission, electrocardiogram indicated ST-segment elevations in the lateral leads. Echocardiography showed anterolateral wall hypokinesia. During urgent coronary angiography, diffuse moderate coronary stenosis in the proximal left anterior descending artery (LAD) and 99% occlusion of the proximal first diagonal branch were found (Figure 1A, B). Given that IVUS indicated a medial dissection and an intramural hematoma in the LAD (Figure 1C), the patient was diagnosed with SCAD. Because her vital signs were stable and the ischemia resolved, we proceeded with medical treatment and followed the medial dissection over time using CTA and non-contrast T1W MRI. The initial CTA, performed 3 days after onset, demonstrated an intramural hematoma and a moderately narrowed true lumen in the proximal LAD (Figure 2A). An intramural hematoma appeared as a hyperintense region on non-contrast T1W MRI (Figure 2C, D). On follow-up MRI 23 days after the onset, the intensity of the hyperintense region decreased (Figure 2E, F), indicating regression of the intramural hematoma. This was confirmed on CTA (Figure 2B), which demonstrated resolution of the intramural hematoma corresponding to the hyperintense region of the LAD. Thus, MRI can be used to assess hematoma resolution.

Visualization of a coronary intramural hematoma with dissection of a coronary artery resulting from percutaneous transluminal coronary intervention with non-contrast T1W MRI was...
first described by our group. We found that MRI can detect intramural hematomas, which is consistent with earlier studies using non-contrast T1W MRI for carotid plaque characterization, with histological examination to show that hyperintense regions correspond to areas of intraplaque hemorrhage.

Given its minimally invasive nature, CTA is thought to be the optimal imaging modality for the follow-up of patients with SCAD. But, because >70% of SCAD patients are women, and approximately 30% of cases occur during the peripartum period, serial CTA may not be optimal due to the radiation exposure involved. Additionally, MRI has the advantage of providing better soft-tissue contrast, enabling better delineation of atherosclerotic plaque components. Alternatively, MRI can be used as a first-line non-invasive follow-up modality to assess hematoma resolution in patients with SCAD.

Disclosures

None.

References