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Images in Cardiovascular Medicine

A Characteristic Finding of Spontaneous Coronary Artery Dissection by Computed Tomographic Angiography

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Conflict of Interest
The authors have no financial conflicts of interest.

A 47-year-old woman with a history of pre-eclampsia visited the emergency department after a sudden onset of chest pain while watching television. Electrocardiography revealed a pathologic ST-segment elevation at the precordial leads of V1 to V5. Vasospastic angina was initially suspected because sublingual nitroglycerin dramatically ameliorated her symptom and electrocardiographic abnormalities. However, coronary computed tomographic angiography (CTA) revealed a significant smooth segmental narrowing at the midportion of the left anterior descending artery (**Figure 1A**). Cross-sectional images revealed a crescent-shaped lumen at the distal part of the stenotic segment (**Figure 1B** and **1C**), which highly suggested extrinsic compression of the true arterial lumen by the false lumen. Coronary

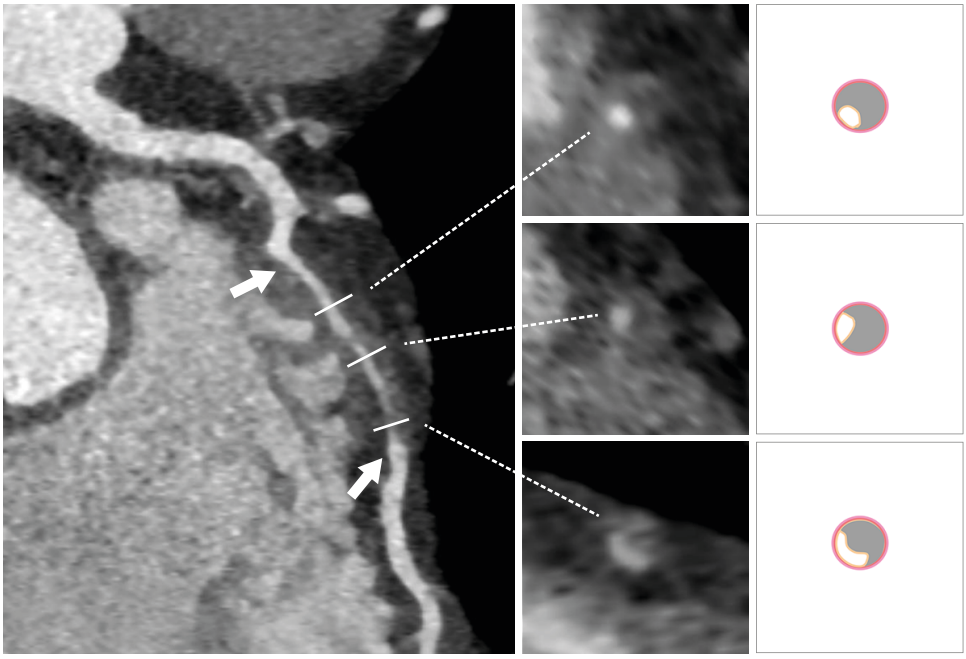

Figure 1. Initial coronary computed tomographic angiography images. (A) Curved planar reconstruction image of the left anterior descending artery, demonstrating a long segmental (30 mm) and smooth narrowing at the midportion. (B) Cross-sectional images at the stenotic segment. Note the crescent-shaped lumen at the distal part of the segment. (C) Schematic images distinguishing the true and false lumens at the corresponding levels.

Author Contributions

Conceptualization: Lee PH; Investigation: Koo HJ, Lee PH; Methodology: Lee PH; Supervision: Lee PH; Validation: Kim AR, Koo HJ, Lee PH; Writing - original draft: Kim AR; Writing - review & editing: Lee PH.

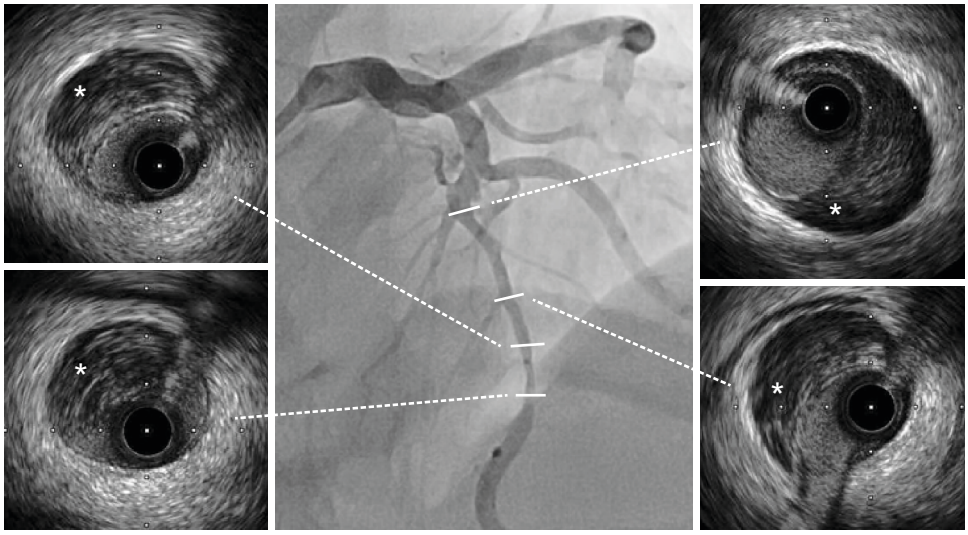

Figure 2. Baseline coronary angiography and intravascular ultrasound images. The intravascular ultrasound image demonstrates the double-lumen appearance of the vessel with the dissection membrane and darker thrombosed false lumen (asterisk).

angiography with intravascular ultrasound assessment confirmed the CTA findings and clarified the intimal-medial membrane, double-lumen appearance, and darker thrombosed false lumen (**Figure 2**, **Supplementary Videos 1** and **2**). She showed no subsequent evidence of ongoing ischemia or hemodynamic instability, and was managed conservatively. She had sustained high blood pressure during hospitalization and received anti-hypertensive medications, including a beta-blocker. Repeat coronary angiography 4 days later revealed substantially improved luminal narrowing, suggesting rapid hydraulic decompression in the false lumen (**Supplementary Video 3**). CTA after 3 months revealed complete healing of the coronary dissection (**Figure 3**).

Spontaneous coronary artery dissection (SCAD) has been increasingly recognized owing to enhanced awareness and advanced cardiovascular imaging techniques.[1)2)] Although SCAD

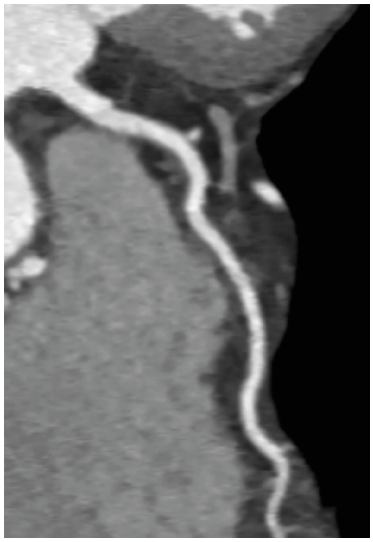

Figure 3. Coronary computed tomographic angiography image after 3 months shows complete resolution of the dissection.

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has been reported using CTA,[3][4] diagnostic hallmarks remain unclear. A crescentic lumen on CTA might be a characteristic finding of SCAD in suspicious acute coronary syndrome, requiring further studies. Meticulous efforts to find identifying patterns of SCAD that are distinguishable from those of atherosclerotic coronary disease may ultimately make less-invasive CTA feasible to aid early diagnosis and assess vessel healing after the acute period.[5]

SUPPLEMENTARY MATERIALS

Supplementary Video 1

Coronary angiography demonstrating diffuse luminal narrowing at the midportion of the left anterior descending artery.

Click here to view

Supplementary Video 2

Intravascular ultrasound images showing double-lumen appearance with intimal-medial membrane.

Click here to view

Supplementary Video 3

Repeat coronary angiography 4 days later showing improved luminal narrowing.

Click here to view

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