

Letter to the Editor

Isolated left coronary ostial occlusion detected by multislice computed tomography



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A 49-year-old woman with no conventional coronary risk factors was referred to our hospital following repetitive episodes of chest pain on exertion. Exercise ECG testing induced significant downsloping ST depression, and we performed invasive coronary angiography (ICA). The left coronary artery could not be visualized, even after several aortic cusp injections with a Judkins left 3.5 catheter inserted via the left radial artery (Fig. 1A). Right coronary artery angiography clearly showed the collateral to the left coronary artery, but the ostium of the left main coronary artery was not visible (Fig. 1B). To investigate the detailed morphology of the occult left main ostium, we performed multislice computed tomography (MSCT) after coronary angiography, with a 128-slice dual source system (Somatom Definition Flash, Siemens Healthcare, Forchheim, Germany; Gantry rotation time: 280 ms, slice collimation: 128 × 0.6 mm). MSCT revealed that the ostium of the left coronary artery was occluded with a non-calcified component (Fig. 2). The physical examination revealed no abnormal findings that might have suggested arteritis (blood pressure abnormal, loss of pulse, and bruit). No luminal narrowing was detected in the other arterial trees of the chest, abdomen, and neck with CT angiography or ultrasonography. The laboratory data was normal. Based on the symptoms, the result of stress ECG testing, and the MSCT findings, the patient was diagnosed

with angina pectoris due to isolated left main coronary artery occlusion. The patient underwent a standard dual bypass of the left anterior descending and left circumflex coronary arteries with the bilateral internal thoracic arteries. The post-operative course was uneventful, and the patient was free from angina symptoms.

It is rare to find an isolated coronary ostial stenosis that is not associated with Takayasu arteritis, syphilitic aortitis, congenital anomaly, an iatrogenic cause, or aortic valve disease [1]. In our case, we could not completely exclude Takayasu arteritis or another inflammatory disease. The incidence was estimated to be only 0.2% in a population of patients with coronary artery disease, defined by ICA. Isolated ostial stenosis occurs predominantly in premenopausal women, which have a low prevalence of coronary risk factors. Although early atherosclerosis was suggested to be the cause of this disease [2], the etiology is quite unknown as in the present case. ICA is the gold standard for diagnosing isolated coronary ostial stenosis. However, in cases of occlusion, it might be challenging to understand the anatomy accurately differentiating congenital anomalies such as single coronary artery and anomalous origin of the left coronary artery from the pulmonary artery, because ICA does not provide a visualization of the occluded segment. In those cases, CT which enables a three-dimensional evaluation of the occluded anatomic passage might facilitate the diagnosis of ostial occlusion. Additionally, CT reveals the morphology of the lesion, including the occluded length, vessel diameter, and plaque composition [3]. MSCT is a useful imaging modality for diagnosing isolated coronary artery occlusion.

References

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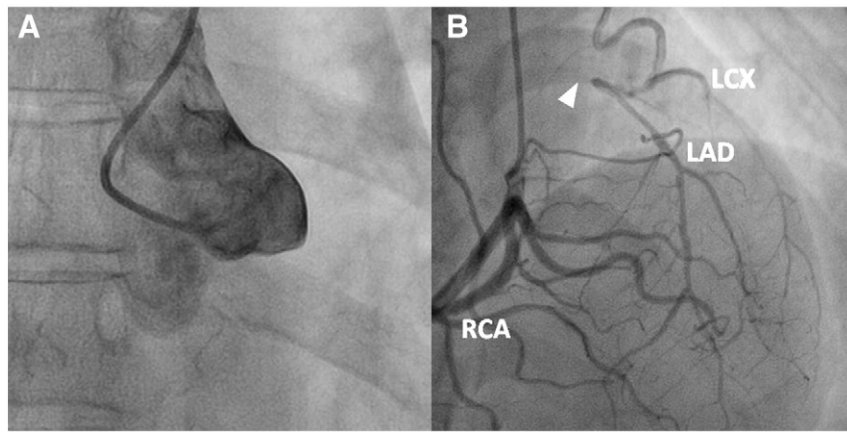


Fig. 1. Invasive coronary angiography. (A) Left coronary artery is not depicted with aortography. (B) Right coronary artery (RCA) angiography shows the collateral to the left coronary artery. The ostium of the left main coronary artery is not visible (arrowhead). LAD: left anterior descending artery; LCX: left circumflex artery; RCA: right coronary artery.

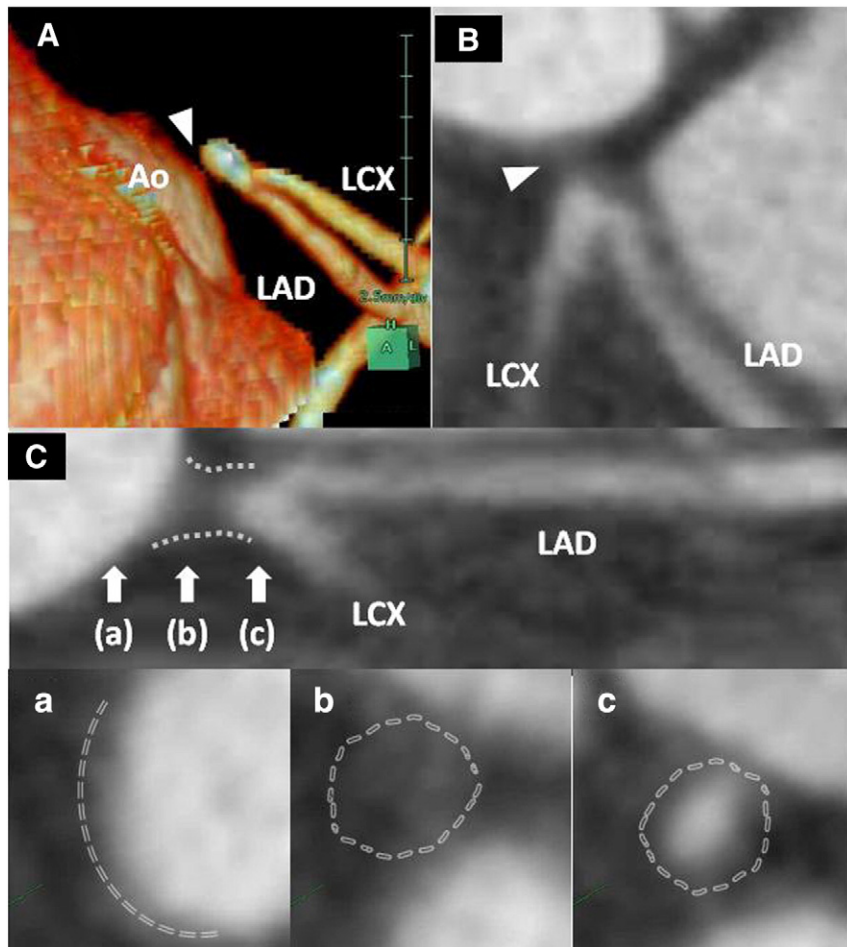


Fig. 2. Coronary computed tomography angiography. (A) Volume rendering image and (B) curved multiplanar reconstructed image of the left coronary artery show an occlusion of the ostium in the left main coronary artery (arrow heads). (C) Stretched multiplanar reconstruction image of the left coronary artery depicts the occluded left main ostium (dotted line). The occluded segment contains a non-calcified component. (a) Cross-sectional image of the aorta. (b) Cross-sectional image of the occluded left main ostium; the occluded segment contains a non-calcified component. (c) Cross-sectional image of the distal left main coronary artery. Insets (a)–(c): The outer vessel area is traced with dotted line. Ao: Aorta; LAD: left anterior descending artery; LCX: left circumflex artery.