Coronary Intramural Hematoma Presenting as Acute Coronary Syndrome

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Abstract

We herein report a case of intramural hematoma without ongoing myocardial ischemia that healed spontaneously with conservative treatment. A 37-year-old woman was admitted due to chest pain. Acute coronary syndrome was diagnosed by electrocardiography and echocardiography. Coronary angiography showed 90% stenosis in the distal portion of the left anterior descending coronary artery, where intravascular ultrasound showed a hematoma, but optical coherence tomography could not detect the entry point. Therefore, we identified the intramural hematoma as the etiology. Because the coronary flow was maintained and chest pain disappeared, we chose conservative treatment. Fifteen days after admission, coronary computed tomography showed an improvement in the intramural hematoma.

Key words: SCAD, ACS, intramural hematoma

(Intern Med 55: 2025-2029, 2016)
(DOI: 10.2169/internalmedicine.55.6652)

Introduction

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome or sudden cardiac death occurring mostly in young or middle-aged healthy people (1, 2). Causes of SCAD include fibromuscular dysplasia (3, 4), peripartum period (5), coronary vasospasm, and connective tissue diseases by which the integrity of the arterial wall can be damaged, however a large number of cases must be classified as idiopathic because no underlying condition can be detected (1, 2).

Currently, intracoronary imaging techniques such as intravascular ultrasound (IVUS) and optical coherence tomography (OCT) can provide detailed morphological information on coronary lesions, which is useful for an accurate diagnosis and the selection of an appropriate treatment strategy (6, 7).

It is widely accepted that the optimal treatment approach for SCAD is to provide conservative treatment without revascularization therapy such as percutaneous coronary intervention or coronary artery bypass grafting when there is no evidence of ongoing myocardial ischemia or hemodynamic instability (8-10); however, the data on outcomes of conservative treatment for patients with unstable SCAD are insufficient.

Case Report

A 37-year-old woman with no previous medical history and no ischemic heart disease risk factors was admitted to our hospital due to chest pain, which started the day before admission and lasted for approximately one hour.

An electrocardiogram (ECG) on arrival showed isolated premature ventricular contraction, mild elevation of the ST segment in leads I, aVL, and V3 to V6, and poor R wave progression (Fig. 1). An echocardiogram showed regional motion abnormality in the anterior wall of the left ventricle from the mid-level to apex. Her coronary angiogram showed 90% stenosis in the distal portion of the left anterior descending coronary artery (LAD), where thrombolysis in myocardial infarction (TIMI) grade 3 flow was maintained (Fig. 2A, B). No stenotic change was observed in other segments of the coronary artery (Fig. 2).

Because SCAD was suspected considering her age, sex, and the absence of coronary risk factors, we performed IVUS and found a nonarteriosclerotic intima forced inward and a heterogeneous intensity area between the intima and...
adventitia in the distal portion of the LAD. Neither plaque nor damage was observed in the proximal segment of the LAD (Fig. 3A). Thus, we diagnosed her disease as dissection of the coronary vessel wall. Subsequently, we performed OCT for a more detailed evaluation of the morphological features of the vessel wall, where we detected no en-
try point (Fig. 3B). We conclusively identified an intramural hematoma (IMH), a type of SCAD, as the etiology.

The fact that her chest pain disappeared and the ECG changes resolved during the examinations suggested that we could stabilize the patient’s condition without revascularization, and we selected conservative treatment with the administration of aspirin, inhalation of oxygen, and bed rest.

On the second day after admission, her chest pain recurred. An ECG showed reelevation of the ST segment in leads I, aVL, and V2 to V6 (Fig. 4). We suspected that the LAD was obstructed by the hematoma and performed coronary angiography again. Her coronary angiogram showed no significant stenotic change from that on admission (Fig. 5).

After the infusion of nitrate into the coronary artery, her chest pain disappeared completely, and ST elevation resolved. We therefore decided to continue conservative treatment and intensified the medical therapy. After starting the administration of nitrate and a calcium channel blocker, her chest pain never recurred. Coronary computed tomography (CT) performed on the 15th day after admission revealed that the IMH had improved and had nearly disappeared (Fig. 6).

**Discussion**

SCAD is a rare clinical entity that frequently presents as...
a form of acute coronary syndrome. In the diagnosis, coronary angiography is not sufficient to identify the cause of stenosis, coronary dissection, or atherosclerotic plaque. Intracoronary imaging techniques such as IVUS and OCT can provide much more detailed information about the morphologic features of the coronary artery, including entry tear, flap, IMH, and associated thrombus (6, 7).

It has been reported that conservative treatment provides excellent long-term outcomes in patients with asymptomatic ischemia or in patients without ongoing ischemia (6, 9, 10). After making an accurate diagnosis of IMH by IVUS and OCT, we chose conservative treatment over revascularization therapy. Furthermore, we found that dissection did not result from the blood flow entering from the endoluminal tear.

SCAD is notably reported to be associated with fibromuscular dysplasia (3, 4), but it is not associated with any long-term adverse events (4). Because SCAD mostly occurs in young or middle-aged patients, it may be not mandatory, but...
nevertheless reasonable to check for extracoronary vascular abnormalities in follow-up CT angiograms. As for this patient, her CT angiogram revealed no extracoronary vascular abnormalities.

Further investigations may lead to the establishment of more effective medical therapy for SCAD regardless of the presence or absence of an internal tear. In our case, the explanation for nitrate and a calcium channel blocker being effective in relieving chest pain and preventing its recurrence was likely that the chest pain resulted from coronary vasospasm at an unstable dissection or from the mechanism of SCAD. In any case, the administration of vasodilators may be essential for patients with unstable SCAD.

We herein described a case of IMH that healed spontaneously with conservative treatment. Intracoronary imaging techniques such as IVUS and OCT are useful for making an accurate diagnosis when SCAD is suspected.

The authors state that they have no Conflict of Interest (COI).

Acknowledgement

We are grateful to Miho Kobayashi for her valuable secretarial assistance.

References


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