Case Report

Recurrent Spontaneous Coronary Artery Dissection Observed With Multiple Imaging Modalities

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SUMMARY

Spontaneous coronary artery dissection (SCAD) is considered to be a rare cause of acute coronary syndrome, especially recurrent or multivessel dissection. We present here the case of a 51 year-old man who had recurrent and multivessel SCAD. In the initial event, the distal segment of the right coronary artery was spontaneously dissected, which was confirmed by coronary angiography (CAG), intracoronary ultrasound (IVUS), and multidetector computed tomography (MDCT). In the second event, the left coronary artery was spontaneously dissected. The dissection was confirmed by IVUS and MDCT, although CAG did not show stenosis, occlusion, or dissection in the left coronary artery. These findings suggest the weakness of CAG and the usefulness of IVUS or MDCT for the diagnosis of SCAD. (Int Heart J 2013; 54: 181-183)

Key words: Spontaneous coronary dissection, Multivessel, Intracoronary ultrasound, Computed tomography

Spontaneous coronary artery dissection (SCAD), especially recurrent or multivessel dissection, has been considered to be a rare cause of acute coronary syndrome and sudden cardiac death. Before the development of coronary angiography (CAG), the diagnosis of SCAD was only possible by autopsy. CAG has substantially increased the clinical diagnosis of SCAD. We report the case of recurrent and multivessel SCAD that was difficult to diagnose by CAG.

CASE REPORT

A 51 year-old man was referred to our hospital for the evaluation of chest pain. The initial electrocardiogram (ECG) revealed inferior ST-segment elevation and elevated cardiac enzymes (peak CK/peak CKMB, 2871/349 U/L). We performed emergent CAG with a diagnosis of acute inferior myocardial infarction. CAG, intravascular ultrasound (IVUS), and multidetector (MDCT) revealed SCAD in the distal segment of the right coronary artery (RCA) (Figure 1). The left coronary system was intact. Seven months later, he experienced severe chest pain again. The initial ECG showed ST-segment depressions in leads V4-6 and elevated cardiac enzymes (peak CK/peak CKMB, 1003/150 U/L). Since recurrent SCAD was suspected to be the cause of the acute myocardial infarction, we performed emergent MDCT before CAG. MDCT revealed low density plaque or hematoma at the left anterior descending artery (LAD), left main coronary artery, and proximal to the middle segment in the left circumflex (LCX) (Figure 2A, 2B). However, conventional CAG did not show stenosis, occlusion, or dissection (Figure 2C). Although CAG was almost normal, IVUS was carefully performed since MDCT suggested dissection of the left coronary artery. IVUS revealed coronary artery dissection from the ostium of the left main coronary artery to the mid-LAD and to the mid left circumflex (Figure 2D-2F). As coronary flow was well maintained, we selected medical therapy. After an uneventful clinical course, he was discharged without any complications.

DISCUSSION

The first case of SCAD was reported by Pretty in 1931. While earlier cases were diagnosed by autopsy findings, the development of CAG has substantially increased the diagnosis of SCAD. The incidence of SCAD is reported to be 0.1% to 1.1% of patients referred for CAG. Although the etiology of SCAD is not fully understood, atherosclerosis and the peripartum period are considered to be common causes of SCAD. Atherosclerotic plaque rupture may cause an intimal flap and intramural hematoma. Peripartum dissection is reported to be associated with eosinophilic infiltration. Connective tissue diseases such as Marfan syndrome, Ehler Danlos syndrome, and Osler Weber Rendu disease, as well as vasculitis, exercise, prolonged sneezing, and oral contraceptive use were also described as etiologies of SCAD. In the present case, diagnostic criteria for such diseases associated with SCAD were not satisfied and there was no trigger event for SCAD. Therefore, we speculated that atherosclerosis caused the SCAD because the patient had multiple cardiovascular risk factors such as hypertension, hyperlipidemia, diabetes mellitus, smoking, and obesity. Furthermore, approximately one-fifth of SCAD cases have...
multivessel dissection.\textsuperscript{6)}

Conservative therapy is the first line therapy for uncomplicated SCAD.\textsuperscript{7)} Since the procedural risk of PCI is high, PCI should be reserved for hemodynamically unstable cases.\textsuperscript{6)} The in-hospital mortality of SCAD is relatively low at approximately 3\% (0-4\%).\textsuperscript{1,9-12)} Long-term survival associated with SCAD is also favorable.\textsuperscript{7,8,13)} However, the recurrence rate of SCAD is reported to be 17\%.\textsuperscript{8)}

Recently, the usefulness of MDCT or IVUS for the diagnosis of SCAD has been reported.\textsuperscript{14,15)} These modalities provide more detailed information than CAG. Our case suggests the possibility that the prevalence of SCAD is still underestimated, since MDCT or IVUS is not routinely performed for acute coronary syndrome (ACS) patients with normal CAG. A portion of SCAD with normal CAG might be missed, and be misdiagnosed as transient coronary spasm. IVUS or MDCT should be considered for the diagnosis of acute coronary syndrome without angiographic evidence of coronary stenosis or dissection.

\textbf{References}


Figure 2. Left coronary artery MDCT and IVUS on re-admission (7 months after the first episode). MDCT of the LAD (A) and the left main coronary artery to the LCX (B) showing extramural hematoma (white arrow). Angiography of left coronary artery did not show severe stenosis (C). IVUS of the left main coronary artery (D), LCX (E) and LAD (F) showing true (black arrow) and false lumen (white arrow). MDCT indicates multidetector computed tomography; IVUS, intravascular ultrasound; LAD, left anterior descending artery, and LCX, left circumflex.