Mural Thrombus in an Ectatic Right Coronary Artery Caused Acute Myocardial Infarction at Downstream Coronary Artery

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SUMMARY

A 72-year-old woman was admitted to our institution because of sudden chest pain. Emergency coronary angiography revealed thrombotic occlusion of the distal right coronary artery. A large cylindrical thrombus was retrieved from her distal right coronary artery using a thrombus aspiration catheter. IVUS showed minimal atherosclerosis and moderate ectatic change at the proximal right coronary artery. A reconstructed IVUS image also showed that a mural thrombus with abrupt ending was still retained at the ectatic segment. Based on this evidence, coronary ectasia was thought to be the primary cause for the thrombus formation and acute myocardial infarction in this case.

Key words: Coronary ectasia, Mural thrombus, Myocardial infarction

A 72-year-old woman was admitted to our institution because of sudden chest pain. She had not experienced chest pain before, nor did she have any coronary risk factors. Electrocardiography showed ST segment elevation at II, III, and aVf, and echocardiography showed hypokinesis of the inferior left ventricular wall. Emergency coronary angiography showed a normal left coronary artery, an occluded distal right coronary artery (RCA), and an occluded posterior lateral (#4PL) branch with an adjacent spherical thrombus image (Figure 1A). Based on these findings, we decided to correct the problem by PCI. First, 8,000 units of nonfractionated heparin was injected intravenously in addition to 2,000 units injected at the beginning of coronary angiography. Through a guiding catheter (Camino Amplatz Left-1, 7F, Goodman), pro-urokinase (3000 units) was selectively injected into the RCA over ten minutes. Coronary angiography confirmed the effectiveness of pro-urokinase injection at reducing the volume of thrombus.
and restoring the distal coronary blood flow to the TIMI-1 level. Next, an aspiration catheter (Thrombuster-II 7F, Kaneka, Japan) was advanced to the occluded #4PL to aspirate the remaining thrombus. Because the aspiration catheter was immediately clogged, the catheter was gently pulled out from the guiding catheter to flush the clogged material. Pressure monitor via guiding catheter was dumped while the aspiration catheter was retrieved, suggesting that a large thrombus within the guiding catheter blocked accurate pressure recording. Although the aspiration catheter contained only a couple of small fragments of thrombus, a huge cylindrical thrombus (3 mm diameter and 30 mm length) was retrieved from the guiding catheter by applying negative pressure (Figure 2). We believe the thrombus was detached from the tip of the aspiration catheter during the maneuver to pull it out and was left behind within the guiding catheter. Preprocedural intravascular ultrasound (Atlantis 40 MHz imaging probe, Boston) showed a discrete spherical thrombus at the orifice of #4PL, an intact but ectatic distal #3, and a mural thrombus at proximal #3. These IVUS observations suggested that a part of the mural thrombus came off from the vascular wall, and then embolized the downstream coronary artery (Figure 3). After the successful thrombectomy, coronary flow was completely restored (Figure 1B) and ST elevation returned to its baseline. Postprocedural IVUS showed minimal atherosclerosis and moderate ectatic change on her RCA. The postoperative course was uneventful, and maximal CK leakage was 800 IU/L. Since coronary ectasia was thought to be the pri-

Figure 1. Right coronary angiography. Left anterior oblique projection.
A: Distal right coronary artery (posterolateral branch, #4PL) showed subtotal occlusion (TIMI-1 flow) in the control coronary angiography (black arrow). At the orifice of the occluded branch, a spherical thrombus head was observed (white arrow). B: After successful thrombectomy, the coronary flow of #4PL was fully recovered (black arrow). A large mural thrombus still remained at the mid right coronary artery (black arrow heads), which was confirmed by intravascular ultrasound.
Mary cause for the thrombus formation in this case, anticoagulation therapy with warfarin was started (2 mg/day) immediately after the procedure in addition to aspirin (200 mg/day). Warfarin was titrated thereafter so as to obtain a PT-INR of 2.0-2.5. A coronary angiogram at discharge (two weeks after the ischemic event) showed that the mural thrombus was completely dissolved. No more ischemic event has been detected so far.
DISCUSSION

Coronary ectasia has been reported to exist in 1-6% of patients undergoing coronary angiography.\(^1,2\) It has also been suggested that coronary ectasia by itself leads to acute coronary syndromes without obstructed coronary arteries mainly due to stagnant blood flow at the ectatic site.\(^3,4\) Although there have been a few reports of reperfusion therapy in patients with thrombotic occlusion of an ectatic coronary artery, most were thrombotic occlusion at the ectatic segment.\(^5\) In this case, we observed a nonobstructive mural thrombus with abrupt ending at the proximal right coronary artery and totally occluded downstream coronary artery, which suggested that a part of the mural thrombus was detached from the vascular wall and embolized to a downstream coronary branch. Although the incidence of acute coronary syndrome might be low in cases with coronary ectasia alone, this case suggested that we still have to monitor these patients carefully. In some selected cases, in whom notable stagnant blood flow was observed in the ectatic segment, anticoagulation therapy with warfarin might be necessary.

REFERENCES