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Combined therapy with excimer laser coronary atherectomy and intracoronary thrombolysis for the management of massive thrombi in coronary aneurysms of post-Kawasaki disease myocardial infarction

Hiroyuki Yamamoto [1], Tomofumi Takaya [1,2]*, Shogo Oishi[1], and Hiroya Kawai[1,2]

[1]Division of Cardiovascular Medicine, Hyogo Brain and Heart Center, Himeji, Japan; and [2]Department of Exploratory and Advanced Search in Cardiology, Kobe University Graduate School of Medicine, Kobe, Japan

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A 39-year-old woman, 9-month postpartum and with a history of Kawasaki disease (KD), presented with persistent chest pain. Electrocardiography revealed ST-segment elevation in the inferior leads, while emergency coronary angiography revealed a completely occluded proximal right coronary artery (RCA) and calcified giant aneurysms (*Figure 1A*). Thromboaspiration and balloon angioplasty were ineffective due to the massive thrombus; subsequent excimer laser coronary atherectomy (ELCA), performed using a 2.0 mm concentric catheter (60 mJ/mm^2; 40 Hz), effectively vaporised the thrombus and improved the coronary flow (*Figure 1B–D*). An antithrombotic therapy was initiated; this included a preoperative dual antiplatelet therapy (comprising aspirin and prasgrel) and a postoperative continuous infusion of unfractionated heparin. However, the patient developed recurrent chest pain 3 h later. Coronary angiography revealed re-occlusion of the mid-RCA, where the ELCA catheter had not reached due to the heavily calcified nodule (*Figure 1E*). Balloon angioplasty and thrombolysis with an intracoronary urokinase infusion (120 000 units for 10 min) achieved optimal results; the final 'thrombolysis in myocardial infarction' flow grade was 3 (*Figure1F–G*, see supplementary material online, Video S1). The patient postoperatively received antithrombotic therapy, consisting of warfarin and aspirin (100 mg daily). Ten days later, follow-up coronary magnetic resonance angiography confirmed no residual thrombus in the RCA (*Figure 1H*). After 1 month of the antithrombotic regimen, aspirin was discontinued; subsequent anticoagulation was continued with warfarin alone to prevent coronary aneurysm-related thrombogenic events. Thereafter, no cardiovascular events occurred for 5 years.

The treatment of acute myocardial infarction (AMI) in patients with KD is challenging. Excimer laser coronary atherectomy is useful for thrombogenic lesions due to its antiplatelet-aggregation and thrombus-vaporization effects.[1] Intracoronary thrombolytic therapies, such as pulse infusion thrombolysis and the 'marinade technique', are also effective against massive thrombi.[2,3] Stent implantation is the standard option for AMI management; however, it is unsuitable for coronary aneurysms due to an increased risk of acute occlusion secondary to stent-strut malapposition to the vessel wall. This case highlighted that a combined therapy with ELCA and intracoronary thrombolysis was effective against acute massive thrombotic occlusion in KD-related coronary aneurysms. Early multidisciplinary interventions are warranted for successfully managing intractable thrombogenic situations.

* Corresponding author. Tel: +81 79 293 3131, Fax: +81 79 295 8199, Email: toto54@hotmail.com
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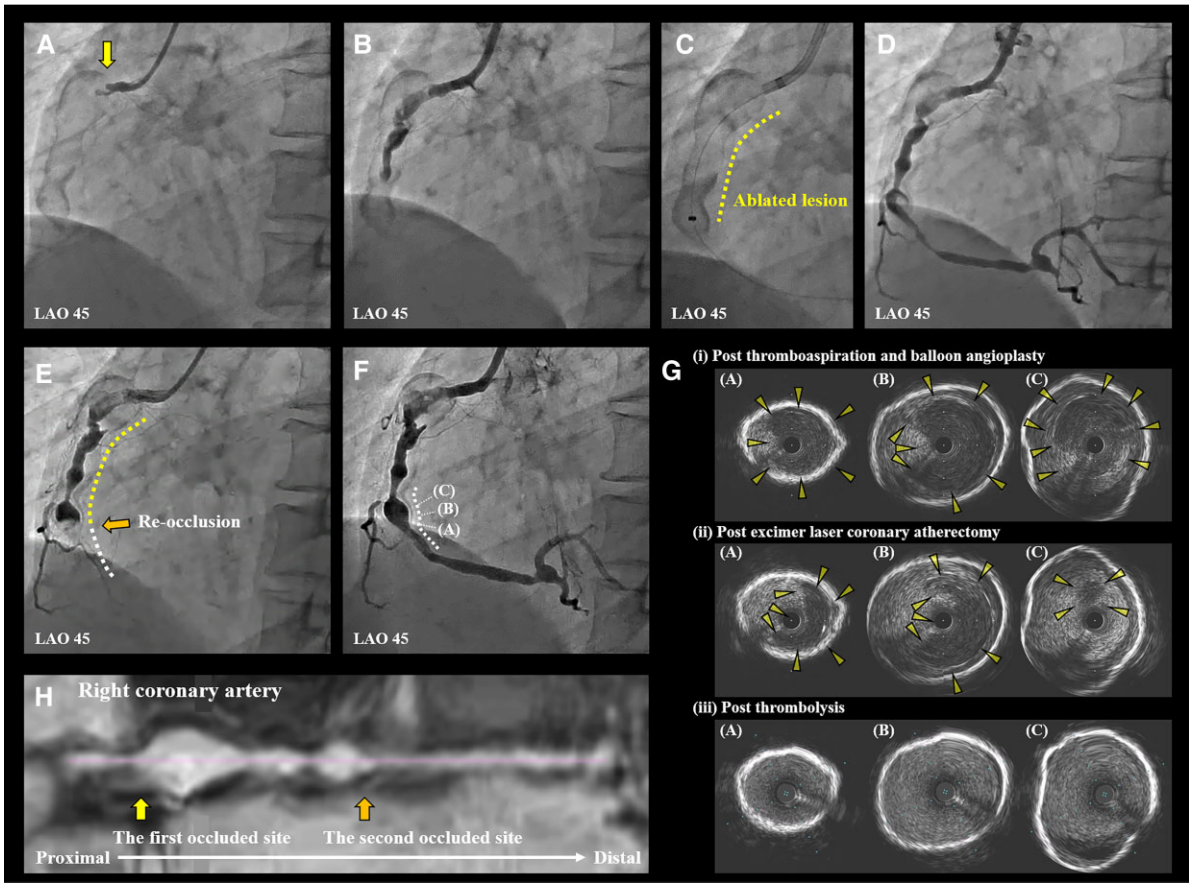

Figure 1 Coronary angiography images taken (*A*) during the initial examination (yellow arrow indicates the occluded lesion), (*B*) after thromboaspiration and balloon angioplasty, (*C*) during excimer laser coronary atherectomy, (*D*) after excimer laser coronary atherectomy, (*E*) after re-occlusion, and (*F*) after intracoronary thrombolysis. Yellow-dotted and white-dotted lines indicate lesions treated by percutaneous coronary intervention with and without excimer laser coronary atherectomy, respectively. (*G*) Intravascular ultrasound imaging performed after each procedure: (i) thromboaspiration and balloon angioplasty, (ii) excimer laser coronary atherectomy, and (iii) intracoronary thrombolysis (arrowheads indicate the thrombus). (*H*) Coronary magnetic resonance angiography reveals that the massive thrombus in the right coronary artery disappeared.

Supplementary material

Supplementary material is available at *European Heart Journal—Case Reports* online.

Consent: The authors confirm that written informed consent for the publication of this case report was obtained from the patient, in line with the Committee on Publication Ethics guidelines.

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Data availability

The data underlying this article are available in the article and in its online supplementary material.

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