

Teaching Video NeuroImage: ECG-Gated 4-D CT Angiography Can Detect Aortic Plaque Mobility in Cryptogenic Stroke

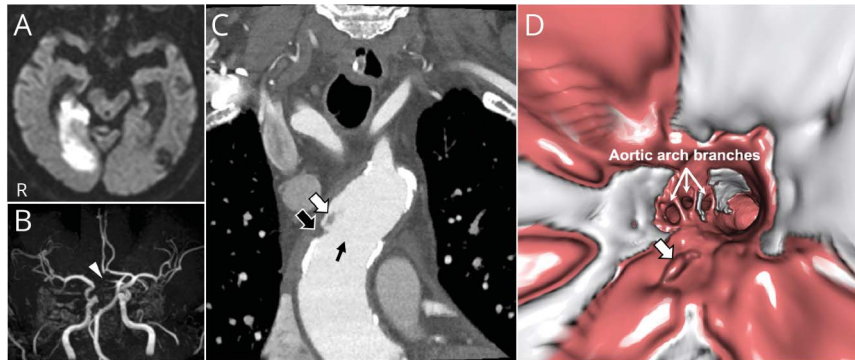
Mikito Saito, MD, Hiroyuki Kawano, MD, PhD, Masamichi Koyanagi, MSc, Miho Gomyo, MD, PhD, Kenichi Yokoyama, MD, PhD, and Teruyuki Hirano, MD, PhD

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Correspondence

Dr. Kawano
hkawano@ks.kyorin-u.ac.jp

Figure Radiologic Findings



(A) Noncontrasted brain MRI diffusion-weighted imaging sequence shows a high-intensity signal in the right posterior cerebral artery (PCA) region. (B) Noncontrasted brain magnetic resonance angiography sequence shows the right PCA occlusion (arrowhead). (C) Coronal view of ECG-gated 4-D CT angiography shows the plaque (black arrow) with the superimposed component (white arrow). (D) Virtual angioscopy from the viewpoint of the ascending aorta (small arrow in C) shows the superimposed component (white arrow).

An 80-year-old man developed an acute ischemic stroke and right posterior cerebral artery (PCA) occlusion (figure, A and B). Cardiac and carotid artery ultrasound examinations and 24-hour ECG monitoring did not identify any embolic sources. ECG-gated 4-D CT angiography (CTA) showed a noncalcified plaque with a superimposed mobile component on the ascending aorta (figure, C, and video 1). Virtual angioscopy using the datasets from ECG-gated 4-D CTA showed seaweed-like mobile component in the 3-D view (figure, D, and video 1). This was diagnosed as aortogenic embolism. The antithrombotic therapy was changed from clopidogrel to warfarin with an international normalized ratio of 2.0–3.0, and low-density lipoprotein cholesterol levels were controlled to less than 70 mg/dL by rosuvastatin.

Aortic plaque is one of the causes of cryptogenic stroke.¹ ECG-gated 4-D CTA can evaluate aortic plaque mobility in the ascending aortic arch and the whole aortic arch. ECG-gated synchronization reduces motion artefact compared to non-ECG-gated CT and improves the assessment of plaque morphology and mobility.² In addition, the virtual angioscopic view, which is an image processing technique to provide endoluminal views of blood vessels,³ can show plaque mobility in 3-D and make it easy to understand the positional relationships between the plaque and the aortic arch branches.

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From the Departments of Stroke and Cerebrovascular Medicine (M.S., H.K., T.H.) and Radiology (M.G., K.Y.), Kyorin University Faculty of Medicine; and Radiology Department (M.K.), Kyorin University Hospital, Tokyo, Japan.

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Appendix Authors

Name	Location	Contribution
Mikito Saito, MD	Kyorin University, Tokyo, Japan	Drafting of the manuscript, concept, design, and critical revision of manuscript for intellectual content, major role in the acquisition of data
Hiroyuki Kawano, MD, PhD	Kyorin University, Tokyo, Japan	Drafting of the manuscript, critical revision of the manuscript for intellectual content
Masamichi Koyanagi, MSc	Kyorin University Hospital, Tokyo, Japan	Major role in the acquisition of data

Appendix (continued)

Name	Location	Contribution
Miho Gomyo, MD, PhD	Kyorin University, Tokyo, Japan	Major role in the acquisition of data, critical revision of the manuscript for intellectual content
Kenichi Yokoyama, MD, PhD	Kyorin University, Tokyo, Japan	Critical revision of the manuscript for intellectual content
Teruyuki Hirano, MD, PhD	Kyorin University, Tokyo, Japan	Critical revision of the manuscript for intellectual content, study supervision, final approval of the article

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