Embolism from External Carotid Artery and Stroke

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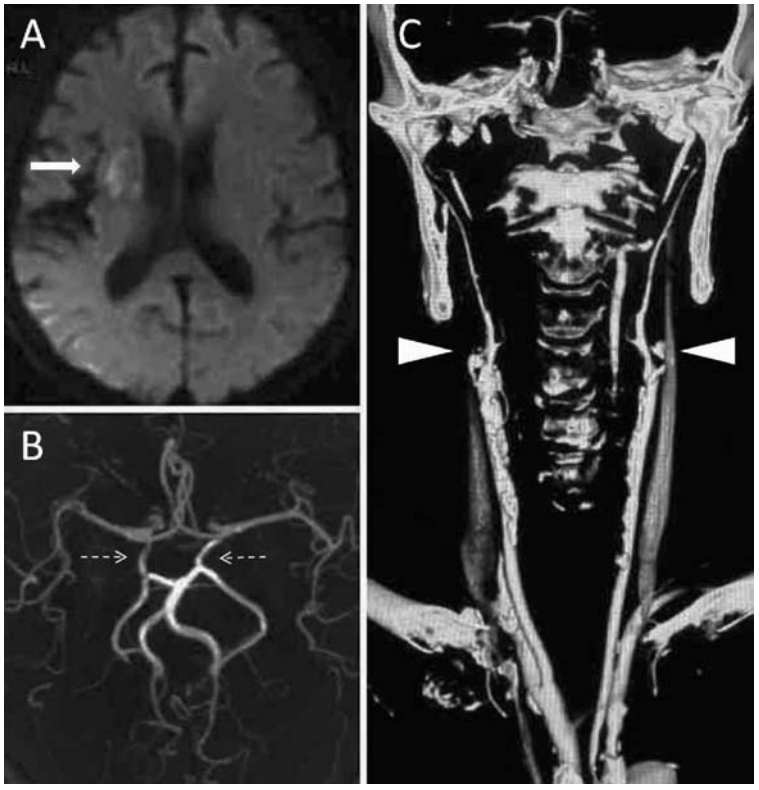

Figure 1. (A) Diffusion-weighted imaging shows high signals in the right hemisphere (arrow). (B) Magnetic resonance angiography reveals the patency of bilateral posterior communicating arteries (dotted arrows). (C) CT angiography shows bilateral internal carotid artery occlusions, moderate stenosis of bilateral external carotid arteries (arrowheads).

A 75-year-old male presented with an acute left-sided hemiparesis. He was a smoker, without other traditional stroke risk factors. Diffusion-weighted imaging showed ischemic lesions in the right hemisphere (Fig. 1A). Computed tomography angiography and cranial magnetic resonance angiography revealed bilateral internal carotid artery occlusion and bilateral external carotid artery stenosis with patent intracranial arteries (Fig. 1B, C). Transcranial Doppler

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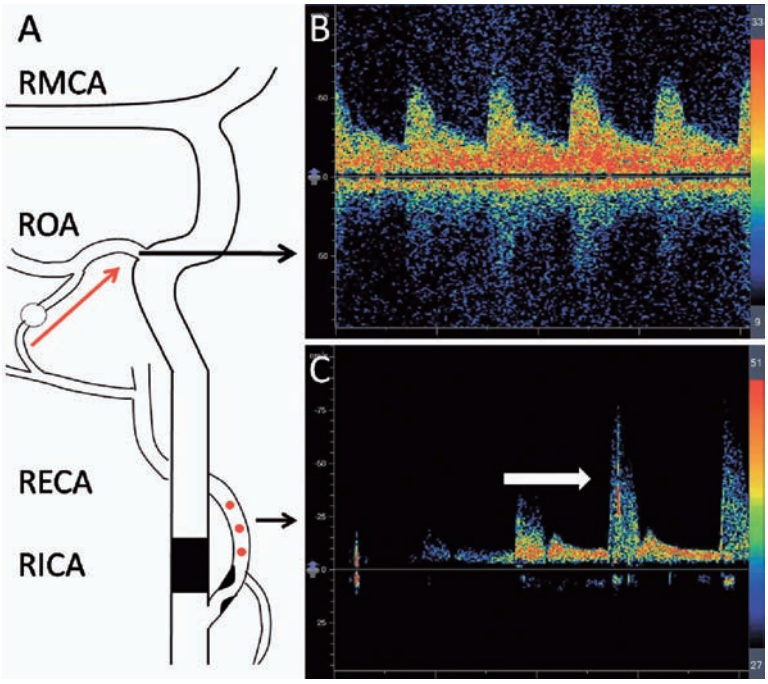

Figure 2. (A) A schematic drawing demonstrates the collaterals in the patient. RICA, right internal carotid artery; RECA, right external carotid artery; ROA, right ophthalmic artery; RMCA, right middle cerebral artery. (B) The blood flow via the right ophthalmic artery is reversed, suggesting a collateral pathway from right external carotid artery via ophthalmic artery to right internal carototid artery. (C) Transcranial Doppler detected a microembolic signal in the right external artery (arrow).

(TCD) suggested collateral pathway from right external carotid artery via ophthalmic artery to right internal carotid artery[1] (Fig. 2 A, B). A microembolic signal was unexpectedly detected in right external carotid artery during TCD evaluation (Fig. 2C).

Theoretically, the emboli from external carotid artery may enter brain via anastomotic collaterals and cause a stroke, although the stump of internal carotid artery was hypothesized to be a source of emboli as well[2]. To our knowledge, this case is the first description of a microembolic signal in external carotid artery ,suggesting exteranal atherosclerosis may play a potential causal role in stroke.

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