CT demonstration of spontaneous internal carotid artery dissection

Case report

DAVID J. LUBBERS, M.D., AND THOMAS A. TOMSICK, M.D.

Department of Radiology, University Hospital, Cincinnati, Ohio

A case of internal carotid artery dissection is presented. It was diagnosed by computerized tomography (CT) and confirmed by angiography. The typical clinical presentation and radiographic evaluation are briefly reviewed. High-resolution CT scanning with intravenous contrast enhancement is a valuable diagnostic aid in the diagnosis of this entity.

KEY WORDS • dissecting aneurysm • internal carotid artery • computerized tomography

INTERNAL carotid artery (ICA) dissection is not an uncommon entity. The pathology involves disruption of the intima and/or media, with propagation of the intramural hematoma (dissection) that subsequently narrows the arterial lumen. Most cases are secondary to trauma, either blunt or penetrating. Even minor trauma, such as caused by brushing teeth, chiropractic manipulation, or sports, has been reported to result in ICA dissection. We describe a case of ICA dissection diagnosed by contrast-enhanced computerized tomography (CT) and confirmed on cerebral angiography. No history of trauma could be elicited from our patient.

Case Report

This 32-year-old male physician developed a dull aching pain in the left mandibular region. Over the next 2 days, he continued to have intermittent left-sided facial pain in various locations, with development of a left Horner's syndrome. A diagnosis of migraine equivalent was entertained. Over the next month the Horner's syndrome remained stable while the left facial pain became intermittent. The patient was referred for evaluation of possible left ICA dissection. He did not wish to undergo an invasive diagnostic procedure; therefore, CT scanning of the neck and head was performed with contrast enhancement. Contiguous 5-mm sections, obtained from C-3 to the base of the skull, demonstrated dissection changes in the wall of the cervical left ICA (Fig. 1). The intracranial images were normal. A diagnosis of ICA dissection was made and confirmed 2 days later by cerebral angiogram (Fig. 2).

Discussion

The most common spontaneous cause of ICA dissection is fibromuscular dysplasia, usually affecting middle-aged women. Dissections due to syphilis, aortic dissection with extension, Marfan's syndrome (cystic medial necrosis), and pharyngeal infections have also been reported. The usual presentation of ICA dissection is thromboembolism with transient ischemic attacks or stroke. Nonembolic presentation is less common, and includes Horner's syndrome, facial or neck pain, pulsatile tinnitus, and asymptomatic carotid bruit. The onset of symptoms may be delayed; up to 40% of traumatic cases may develop symptoms 24 to 48 hours after the injury. The diagnosis should be considered in any patient with a neurological deficit and a history or suspected history of head or neck trauma.

Certainly arteriography should be the procedure of choice when ICA dissection is suggested by the clinical history and physical examination. The findings usually include a normal carotid bifurcation with a segment of cervical ICA narrowing, which usually does not extend into the petrous portion. Severity of the stenosis depends on the duration and state of resolution of the dissection; severely stenotic dissections may revert to...
Spontaneous internal carotid artery dissection

**Fig. 1.** Computerized tomography, axial image, at the C-1 vertebral level showing a normal right internal carotid artery (ICA, open arrow) and right and left jugular veins (small closed arrows). The left ICA is enlarged with a rim of high attenuation encircling a crescent-shaped area of lower attenuation (intramural thrombus) and an enhancing central lumen (large arrow).

Normal arteriographic appearance over 4 to 8 weeks or may cause arterial occlusion. Intravenous or intraarterial digital subtraction angiography may be diagnostic, but attention must be carefully directed to the upper cervical ICA, easily collimated off in examinations centering on the bifurcation and the intracranial vessels, or obscured by a misregistration artifact.

The CT findings of ICA dissection demonstrated in our patient were: 1) visualization of the vessel wall external to the dissecting hematoma; 2) decreased attenuation due to the aging organizing intramural thrombus; and 3) an enhancing narrowed lumen. It might be expected that enhancing pseudoaneurysms and aneurysms of the vessel wall could be shown by CT as well. Total ICA occlusion may be a nonspecific sign.

Clinical diagnosis of an ICA dissection can be difficult, particularly in patients without a history of trauma or of thromboembolic symptoms. Under noncompelling clinical circumstances, the referring physician may eschew a diagnostic arteriogram initially, and request a less invasive contrast-enhanced CT examination. If the radiologist is aware of the potential clinical diagnosis, he can turn his attention to the cervical ICA with high-resolution scanning to confirm the potential diagnosis.

**References**


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Address reprint requests to: David J. Lubbers, M.D., Department of Radiology, University Hospital, 234 Goodman Street, Cincinnati, Ohio 45267.