Imaging Techniques in Suspected Internal Carotid Artery Dissection

To the Editor:

The case report by Panisset and Eidelman brought my attention to a consequence of internal carotid artery dissection that I have not previously encountered in my practice, namely, multiple lower cranial nerve pareses. While I appreciate their enlightening me on that process, I must object to the interpretations of normal computed tomography (CT) scans in two of the patients.

Figure 5 demonstrates the bull's-eye sign of the narrowed, enhancing true lumen surrounded by hypodense intramural hematoma. It stands out as a virtual negative in contrast to the magnetic resonance image shown on the opposite page.

Figure 1 demonstrates a round, probably vascular structure just medial to the right styloid process, which is in the expected location of the right internal carotid artery, but larger than would be expected. The left internal carotid artery is visible on the opposite side and normal in size. Contrast-enhancement effect seems somewhat suboptimal and certainly insufficient to distinguish enhancing true lumen from intramural hematoma. Nevertheless, the dilated structure in the expected position of the internal carotid artery is highly suspicious for carotid dissection.

A diagnosis of internal carotid artery dissection can be made on CT, and we have done so multiple times in the past. We are constantly vigilant to examine the cervical internal carotid artery in...
cases of trauma and stroke and also try to determine its normalcy in young stroke patients. It is true that in the elderly patient, kinks and bends of the cervical internal carotid artery can cause a somewhat dilated, sausage-like appearance. Nevertheless, when dissection of the internal carotid artery is a clinical possibility based on symptoms and signs presented, we make a conscientious effort to examine this vessel.

With suspicious CT examinations, we believe an MR examination to be generally superfluous and would generally proceed to arteriography.

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References

The following is in response:

To the Editor:

We appreciate the comments of Dr. Tomsick, who has drawn attention to the usefulness of computed tomography (CT) in the diagnosis of internal carotid artery (ICA) dissection.1 We acknowledge that CT scans in two of our cases demonstrated asymmetry at the level of ICA, but it required a magnetic resonance imaging (MRI) study to unequivocally demonstrate carotid artery dissection. Computed tomographic scans of the base of the skull and the cervical region are often difficult to interpret because the neighboring bony structures may produce artifacts in the areas of interest. However, MRI enables one to distinguish between the lumen, normal vessel wall, and dissecting hematoma, without bone artifacts.4 Also, MRI has the advantage of clearly imaging the posterior fossa anatomy, which helps rule out disorders of this area that can mimic syndromes of ICA dissection.

The superiority of MRI over CT scan in defining ICA dissection is also borne out in the literature. In studies using both techniques to investigate ICA dissection, CT scans were determined to be either negative or only mildly abnormal, while MRI studies revealed significant abnormalities of the ICA.2-4 Also, MRI can be used to define the characteristics of ICA dissection,6 and offers a reliable noninvasive means of following the evolution of the pathological process.6
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