Carotid Artery Dissection as Cause of Stroke After Head Trauma

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A 14-year-old healthy male was observed in a hospital due to a progressive state of confusion, somnolence, and disorientation. These symptoms began five days before, when he suffered a head trauma after diving into a pool. Clinical examination revealed painful neck manipulation, temporo-spatial disorientation, confusion, dysarthria, mixed aphasia, and right central facial paralysis. The blood analysis was normal, and a brain computerized tomography showed a hypodense lesion compatible with left medial cerebral artery stroke (Fig. 1). The patient was referred to a central hospital for neurosurgical and neuropediatric consultation where brain magnetic resonance imaging (MRI) and angio-MRI were performed. These confirmed a left medial cerebral artery stroke, and showed irregularity, stenosis, and intra-luminal thrombosis of the left common carotid artery as well as the complete occlusion of the left internal carotid artery (Figs. 2, 3, 4, and 5). These findings were compatible with left carotid artery dissection, which was later confirmed by transcranial Doppler ultrasound. Acetylsalicylic acid was started (250 mg/day) with clinical improvement. The patient was discharged at day eight of hospitalization under acetylsalicylic acid treatment, being asymptomatic six months later.

Carotid artery dissection accounts for 7.5%-20% of all acute ischemic strokes in pediatric patients, with trauma as the main etiology.[1,2] Carotid artery dissection occurs after direct blunt/penetrating injury to internal carotid artery or secondary to (over-) stretching.[3] Magnetic resonance imaging and angio-MRI are the neuroimaging methods of choice because they are sensitive and as specific as angiography,[2] but they assess the vessel walls and lumen while avoiding radiation.[1] Transcranial Doppler ultrasound can also be used, especially in unstable patients or when other methods are unavailable.[4] Carotid artery dissection prognosis is usually good with early treatment, which can be medical (anticoagulation or anti-aggregation) or, when this fails, endovascular stenting or surgery.[3,5] For extra-cranial carotid artery dissection, no evidence exists suggesting the superiority of anticoagulation over anti-aggregation or the optimal duration of anti-aggregation treatment.[3,5] Because carotid artery dissection abnormalities evolve with time, serial imaging is warranted within the first year of diagnosis.[1]

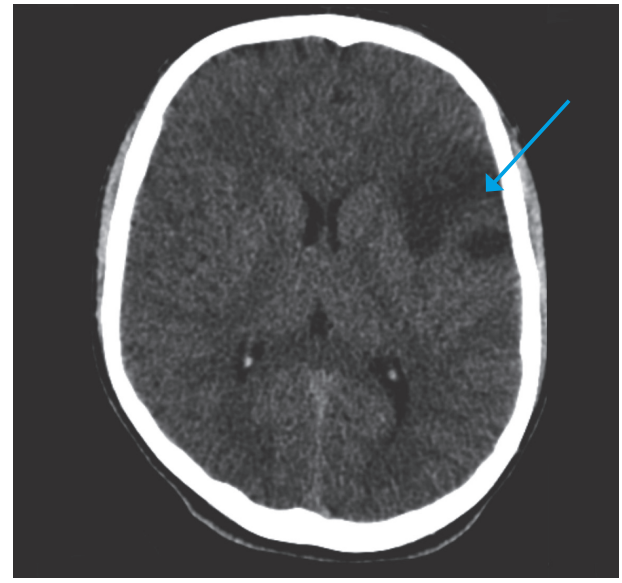

Figure 1. Computerized tomography image displaying a hypodense lesion compatible with left medial cerebral artery stroke.

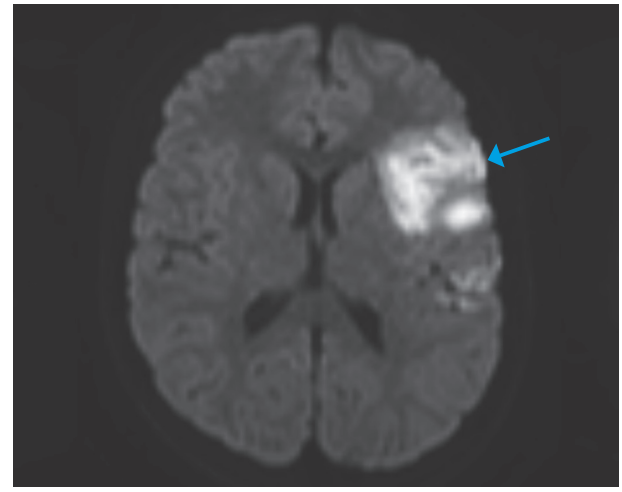

Figure 2. Axial diffusion-weighted magnetic resonance image shows ischemia in the territory of the left middle cerebral artery.

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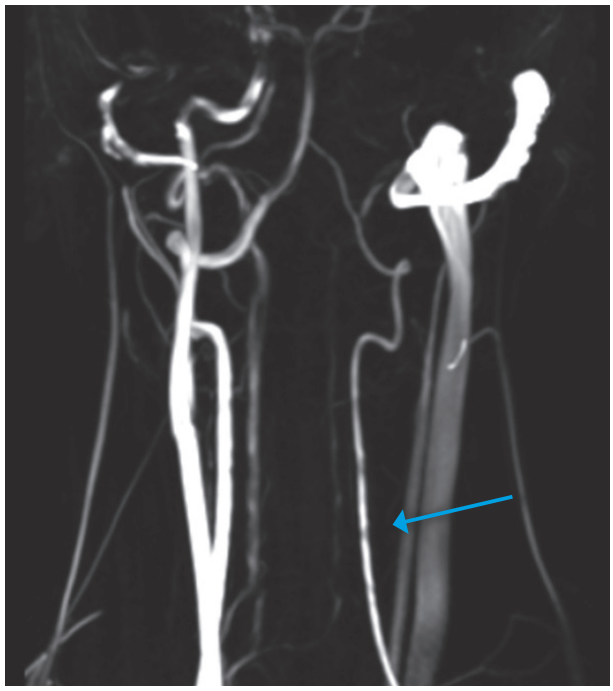

Figure 3. Left common carotid artery dissection with focal stenosis (string sign) on angio-MRI.

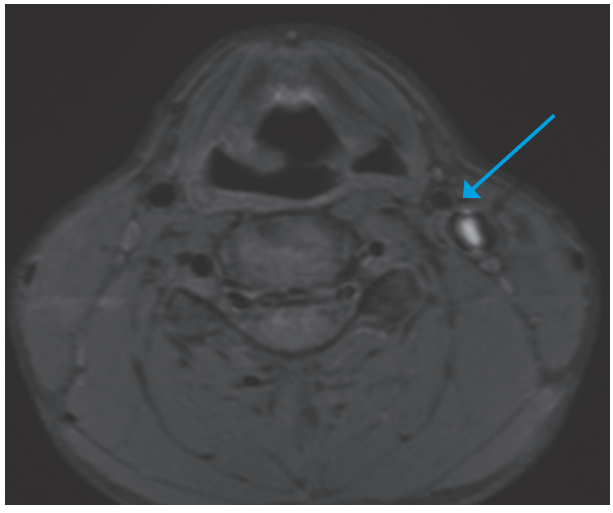

Figure 4. Axial T1-weighted magnetic resonance image shows intraluminal thrombus in the left common carotid artery

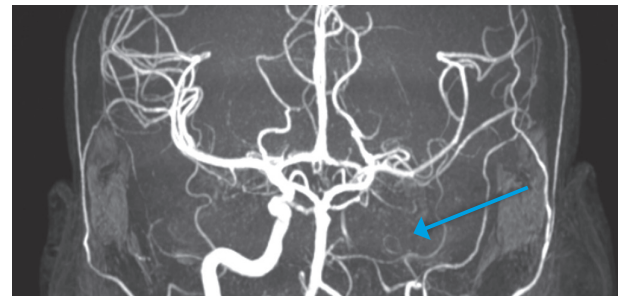

Figure 5. Absence of contrast in the left internal carotid artery on angio-MRI. The median cerebral artery is perfused from the anterior communicating artery.

Keywords: Adolescent; Carotid Artery, Internal, Dissection/diagnostic imaging; Craniocerebral Trauma/complications; Stroke/etiology

WHAT THIS REPORT ADDS

- A case of acute ischemic stroke in a healthy young patient should raise the suspicious of a head/neck trauma.
- Carotid artery dissection is an important cause of acute ischemic stroke in children and adolescents.
- Trauma is the main etiology of carotid artery dissection in pediatric patients and this diagnosis should be considered in any case of acute ischemic stroke with a previous history of head and neck traumatic injury.
- Magnetic resonance imaging and angio-MRI are the neuroimaging methods of choice in carotid artery dissection.
- Medical treatment of extracranial carotid artery dissection is controversial and may include anti-aggregation or anticoagulation therapy.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Consent for publication

Consent for publication was obtained.

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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