Pediatric Stroke: Still a Challenging Diagnosis

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A 7 month-old, previously healthy, male infant was admitted to the emergency department for sudden-onset hypotonia, loss of head control, and tonic extension of the upper limbs lasting less than five minutes. He became asymptomatic after vomiting and falling asleep. A similar episode was reported two days beforehand. He had no recent infections, and the family history was unremarkable.

Physical examination was normal, without neurological impairment. Laboratory workup showed increased creatine kinase (435 U/L) and lactate dehydrogenase (577 U/L). Complete blood count, blood chemistry, C-reactive protein, lactate, and coagulation tests were normal.

Brain magnetic resonance (MRI) two days after admission showed multifocal T2-hyperintense lesions in both cerebellar hemispheres, with restricted diffusion, suggesting acute/subacute ischemic stroke in the distribution of the right superior and left posterior inferior cerebellar arteries. Evaluation with computed tomography angiography revealed an abnormal luminal caliber on the V2-V3 segment of the left vertebral artery, corresponding to a small dissecting pseudo-aneurysm (Fig. 1). Antiphospholipid antibody, homocysteine, and cardiac evaluation were normal. He started acetylsalicylic acid at 3 mg/kg/day and was discharged after six days without complications during his hospital stay.

After one-year, the follow-up neurological examination was normal, MRI showed chronification of the aforementioned lesions (Fig. 2), and acetylsalicylic acid was discontinued.

Pediatric arterial ischemic strokes involve the posterior circulation in one third of the cases.[1] Vertebral dissection accounts for a significant percentage of arterial ischemic strokes, which has up to a 19% recurrence rate.[2,3] Sudden-onset focal neurological deficits, hallmarks of arterial ischemic strokes, are present in 80% of the cases, whereas 30% present as seizures.[4]

Differential diagnosis is broad, raising questions of whether we are facing a seizure, transient ischemic accident, or an arterial ischemic stroke, making an urgent MRI paramount.[2,3,5] The difficulty in diagnosing arterial dissection in pediatrics emphasizes the importance of thorough vascular imaging namely cervical echo-Doppler when available and MRI in all children.[6]

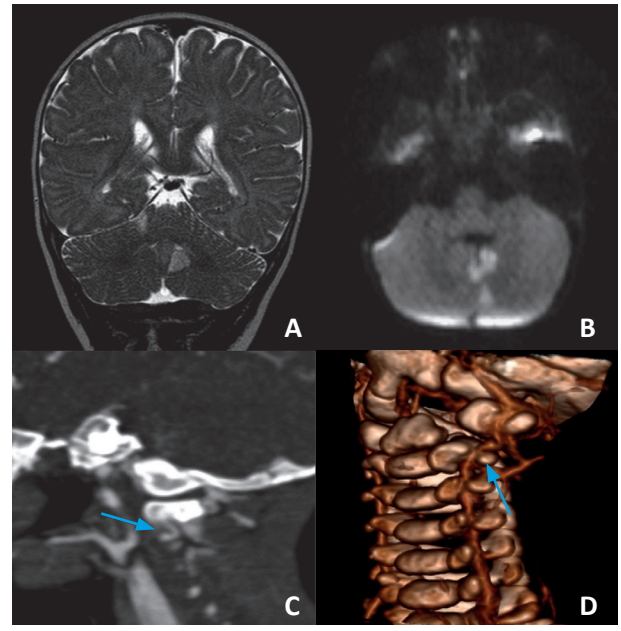

Figure 1. Coronal T2-weighted imaging (a) shows cortico-subcortical lesions in both cerebellar hemispheres, well-defined and with slight expansion. Axial diffusion-weighted imaging (b) reveals the reduced diffusion of the left hemispheric lesions, compatible with acute ischemia. Computed tomography angiography (c, d) depicts focal fusiform dilation in the V3 segment of the left vertebral artery, suggesting small dissecting pseudo-aneurysm (arrows).

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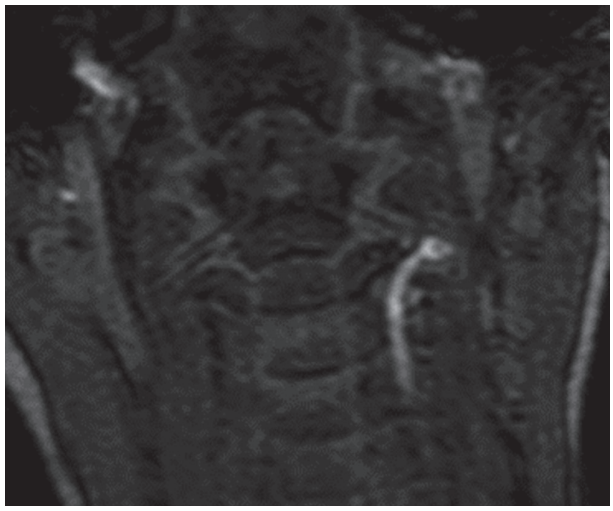

Figure 2. Magnetic resonance angiography at the three-month follow-up shows the persistence of the dissecting pseudo-aneurysm.

Keywords: Infant; Ischemic Stroke/diagnostic imaging; Ischemic Stroke/etiology; Vertebral Artery Dissection/complications; Vertebral Artery Dissection/diagnostic imaging

WHAT THIS REPORT ADDS

- The diagnosis of acute ischemic stroke is particularly challenging in children because of a high number of stroke mimics.
- The sentinel signs of pediatric stroke are different from the ones found in adult patients.
- Children with acute stroke should be evaluated for arteriopathy, thrombophilia, and cardiac causes.
- All children should undergo thorough vascular imaging with magnetic resonance imaging as well as cervical echo-Doppler whenever available.

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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