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A PRESCHOOL-AGE CHILD WITH FIRST-TIME SEIZURE AND ATAXIA

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□ **Abstract—We present a case of a 4-year-old previously healthy child who had a possible first-time seizure at home, and upon a second Emergency Department evaluation was found to have gross cerebellar ataxia suggestive of acute stroke. Initial computed tomography scan and metabolic work-up were unrevealing. Subsequent neuroimaging demonstrated stroke in the left medulla and cerebellum secondary to left vertebral artery dissection. Cervical artery dissection may cause up to 20% of strokes in childhood and adolescence. Unlike typical adult presentations, antecedent or concurrent head and neck pain occurs less often in pediatric dissections. Symptoms of posterior circulation ischemia resulting from vertebral artery dissection may include vertigo, vomiting, ataxia, dysarthria, and seizure. Willingness to utilize newer, non-invasive imaging modalities may lead to earlier recognition of cervical artery dissection when patients have prodromal symptoms or episodes of transient ischemia. Vertebral artery dissection should be included in the differential diagnosis when evaluating children with first time seizure, headache, or neck pain.**

□ **Keywords—vertebral artery dissection; pediatrics; stroke; anticoagulation; ataxia**

CASE REPORT

A 4-year-old child was brought to the Emergency Department (ED) by his mother with a chief complaint of "he keeps falling down." Seven hours before presentation, she had been called to her son's bedroom by a sibling because the patient "could not move." She found her son awake and lying supine on the floor, sluggish to respond to verbal and tactile stimuli. The brother reported that the patient had abruptly fallen down and had been making "choking sounds." His mother took him to a local ED, where he was evaluated and discharged home with a diagnosis of seizure. His symptoms had seemed to resolve spontaneously by the time of that evaluation, but one hour before presentation to our ED, his mother noticed that he was falling to the left while ambulating, and seemed sleepier than usual. He also had vomited twice, and was hiccoughing frequently.

On review of systems, the patient had been generally well. The past medical history was significant for frequent otitis media, seasonal allergies managed with loratadine, and hospitalization at age 1 year for pneumonia. He was the product of an uncomplicated pregnancy, but required 5 days of phototherapy after birth for hyperbilirubinemia. The immunizations were up to date.

Vital signs on presentation were: oral temperature 36.9°C, pulse 96 beats/min, respiratory rate 20 breaths/min, and 97% saturation by pulse oximetry. General appearance, hydration status, and cardiorespiratory examination were all normal. On neurologic examination, the child was alert and oriented, and was watching cartoons. The cranial nerve examination was normal except for mild dysarthria. The muscle strength was normal. When asked to ambulate, he was grossly ataxic, began to fall, and had to be caught to prevent him from falling against the wall of the examination room.

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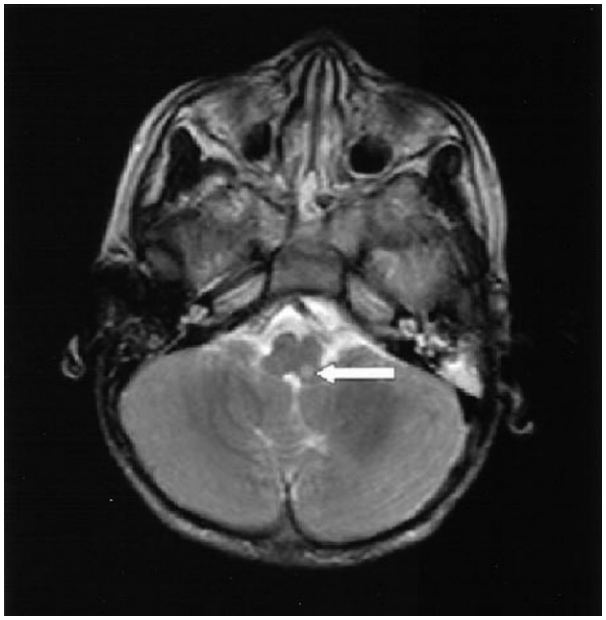

Figure 1. MR image with white arrow demonstrating stroke in the left medulla.

Electrolytes, complete blood count, and urine toxicology screen were normal. A non-contrast head computed tomography (CT) scan was interpreted as normal. The child was subsequently admitted to the general pediatrics service for neurology consultation and additional neuroimaging.

Upon admission to the pediatric ward, intravenous heparin was initiated. On hospital day 2, magnetic resonance imaging (MRI) demonstrated posterior inferior cerbellar artery (PICA) distribution stroke (Figure 1,) whereas magnetic resonance angiogram (MRA) demonstrated a cut-off of the left vertebral artery (Figure 2.) CT angiography performed on hospital day 3 confirmed left vertebral artery occlusion secondary to vertebral artery dissection (VAD) (Figures 3, 4.) The patient's ataxia improved substantially over the next several days, and he was transitioned from unfractionated heparin to subcutaneous dalteparin. He was discharged home on levetiracetam for seizure prophylaxis. Other than subsequent ED visits for unrelated complaints, the patient has been lost to follow-up, but the ED records note that anticoagulants have been discontinued and the child's neurologic deficits have resolved.

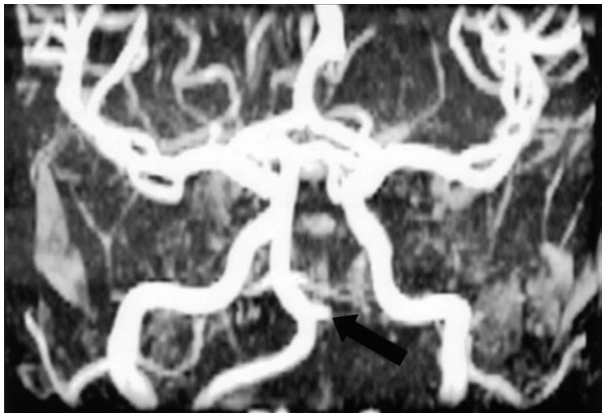

Figure 2. MRA reconstructed image with black arrow indicating terminus of occluded left vertebral artery, visible due to back-filling with gadolinium.

Figure 3. CT angiography image demonstrating similar anatomy to Figure 2. White arrow indicates right vertebral artery. Black arrow indicates terminus of otherwise occluded left vertebral artery.

DISCUSSION

Stroke is rare in childhood. Limited retrospective data suggest an incidence of approximately 2.5 to 3.1 cases