A Stroke of Luck: Syncopal Episode Leads to Inpatient Work Up of Acute and Chronic Stroke  
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Abstract  
A pediatric patient presenting with altered mental status often stimulates a wide range of differential diagnoses, but pediatric stroke is not often high on the list and missed frequently in the emergency setting. We present a case where a significant past medical history presented with brief altered mental status after a syncopal episode and was initially presumed to have post-concussive symptoms only to later present with progressive neurologic changes diagnostic of chronic pontine stroke. Patient was playing golf outside when he started to feel dizzy and blurry. He then had an episode of syncope and fell лицемерно on concrete. He regained consciousness about 10-15 seconds later. He was helped up by his wife and escorted to a building. A 16 year old patient was found with tinnitus visual signs and normal blood glucose. Parents were anxiously at the emergency room when AS developed "bubbling sounds" and "starting losing balance". In the ED, he reportedly had another episode in which he had dysarthria and "babbly speech" and "started losing balance". In the ED, he had a normal neurologic exam with cranial nerves and facial symmetry, but mild dysmetria with finger-to-nose and slow but appropriate tandem gait on physical exam. Prompt consultation of pediatric neurology is recommended in these settings to assist in the diagnosis and management of a patient with a suspected stroke. What can present as relatively simple diagnoses of acute dehydration or vasovagal syncope, can often be something more ominous. A thorough history and neurological exam is integral to the early diagnosis of strokes in pediatric patients. Approximately 77% of patients older than one month with an arterial ischemic stroke presented with focal neurologic deficits and 10% having deficits in speech and 10% presenting with aura (both of which were seen in this patient). Imaging with CT is important to evaluate for possible hemorrhagic strokes. Diffusion and perfusion magnetic resonance imaging has largely been considered the gold standard for diagnosing pediatric ischemic stroke. \(^1\) Though the imaging of our patient revealed only the posterior lesions and no sign of an aneurysm or vasculopathy, the presence of a PFO and the previous history of one episode makes a cardiology consult mandatory for the infant's case. Later in the case, the patient's neurologic exam was found, concerning for paradoxical stroke. He was taken for an echocardiogram on hospital day 4 where patent foramen ovale was found, concerning for paradoxical stroke. He was taken for cardioform device closure and tolerated the procedure well. Team agreed for closure of PFO due to no other indications for the possible pineal tumors having been found.

Discussion  
Strokes represent a rare but significant cause of neurologic morbidity and mortality in the pediatric patient. Death is seen in approximately 12% of cases, while cases greater than 50% suffer significant decrease in quality of life after suffering a stroke. \(^2\) In terms of incidence, one study reports about 1.2-2.8 cases of arterial ischemic strokes per 10,000 children for children above the age of 1 month with a higher incidence reported in neonates. \(^3\) Etiologies of arterial ischemic strokes range from arteriopathies including Moyamoya, congenital heart defects, and hypercoagulable states with one study reporting arteriovenous malformations as the most common cause of arterial ischemic strokes in children older than 29.4 days. \(^4\) One case can stand out in the challenges and importance associated with diagnosing a patient with a stroke. What can present as relatively simple diagnoses of acute dehydration or vasovagal syncope, can often be something more ominous. A thorough history and neurological exam is integral to the early diagnosis of strokes in pediatric patients. Approximately 77% of patients older than one month with an arterial ischemic stroke presented with focal neurologic deficits and 10% having deficits in speech and 10% presenting with aura (both of which were seen in this patient). Imaging with CT is important to evaluate for possible hemorrhagic strokes. Diffusion and perfusion magnetic resonance imaging has largely been considered the gold standard for diagnosing pediatric ischemic stroke. \(^1\) Though the imaging of our patient revealed only the posterior lesions and no sign of an aneurysm or vasculopathy, the presence of a PFO and the previous history of one episode makes a cardiology consult mandatory for the infant's case. Later in the case, the patient's neurologic exam was found, concerning for paradoxical stroke. He was taken for an echocardiogram on hospital day 4 where patent foramen ovale was found, concerning for paradoxical stroke. He was taken for cardioform device closure and tolerated the procedure well. Team agreed for closure of PFO due to no other indications for the possible pineal tumors having been found.

References  
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Figure 1: MRI Brain showing left acute pontine stroke and right chronic pontine stroke.

Figure 2: MRA of the brain indicating no evidence of thrombus.