Case Study

A 55-year-old woman presented to the Emergency Department with complaints of headache, diplopia, and double vision (Figure 1). Patient noted 2 weeks of an aching right-sided headache and a “droopy eyelid.” Three days before our evaluation, her symptoms worsened and she began to develop diplopia. On exam, she demonstrated right-sided ptosis, a dilated pupil with a sluggish light response, and a downward and lateral deviation of the right eye. The remainder of neurologic exam was within normal limits.

The patient underwent a stat unenhanced computed tomography (CT) scan of the brain. This study was negative for bleed, mass, or acute cerebral vascular accident. Because there was high clinical suspicion for a vascular emergency, neurology was consulted and magnetic resonance angiogram imaging of the brain was ordered. This revealed a 3 mm x 7 mm posterior communicating aneurysm. Diagnostic cerebral angiogram confirmed the diagnosis and successful endovascular coiling of the aneurysm was performed (Figure 2). The patient was discharged home on postoperative day 1 with resolution of headache but persistence of her third nerve palsy. Unfortunately, the patient has since been lost to follow-up.

Discussion

Posterior communicating aneurysms account for 25% of all intracranial aneurysms. Although symptomatic patients typically present with subarachnoid hemorrhage, roughly 20% will present with an isolated oculomotor nerve palsy. This results when the aneurysm compresses the oculomotor nerve and the parasympathetic nerve fibers that run with it. As a result, patients will develop ptosis and mydriasis (from a disruption in parasympathetic innervation) and a “down-and-out” deviation of the eye (from a disruption in the oculomotor nerve innervation).

Patients presenting with an isolated third-nerve palsy with pupillary involvement must be considered to have a posterior communicating aneurysm until proven otherwise. Early intervention can improve return of neural function and avoid a catastrophic rupture, which carries an unacceptable rate of morbidity and mortality. Conventional unenhanced CT scan and magnetic resonance imaging have high false-negative rates and therefore cannot exclude the diagnosis. Patients must therefore undergo magnetic resonance angiogram or CT angiography, which have sensitivity up to 97%.

References