

Subarachnoid Hemorrhage or Migraine?

Case History and Follow-up Submitted by Randolph W. Evans, MD

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The differential diagnosis of “the worst headache of my life” is illustrated by the following history.

CLINICAL HISTORY

This 46-year-old woman presented with a 3-hour history of sudden, left-sided, frontotemporal and retro-orbital pressure and throbbing. The headache became a 10/10 in severity within 1 minute and was the worst headache she had ever had. Shortly after the headache began, she saw some “squiggly” lines in the right side of vision which resolved after approximately 2 hours. She had nausea and retching during the first hour of the headache. She also reported light and noise sensitivity. About 2 hours after the onset of the headache, she developed tingling of the right upper extremity and both sides of the upper lip which resolved after 45 minutes. She had no paresis. After about 2 hours, the headache became a bitemporal throbbing.

Since her teens, she has had left- or right-sided throbbing headaches with nausea, light and noise sensitivity, but no aura about twice a month. Menses have been a trigger. She would take ibuprofen and go to bed, but the headache would last 1 to 2 days. In addition, she has had mild headaches about twice monthly described as a bitemporal pressure, without associated symptom, relieved by ibuprofen.

Past medical history was positive only for Crohn’s disease which was inactive.

Blood pressure and neurological examination were normal.

Questions.—What is the diagnosis? Would you recommend testing?

EXPERT COMMENTARY

The most significant aspect of this consultation is the headache being described as the *worst* headache the patient has ever had. A thorough assessment to rule out a subarachnoid hemorrhage, or a warning leak either from a saccular aneurysm or from an arteriovenous malformation (AVM), is imperative whenever a patient states that the headache is her most severe ever. Attention must also be paid if her headache represents a distinct change in pattern from her usual attacks, or if the headache is severe and of sudden onset. A CT scan and lumbar puncture are both necessary. Computerized tomography scans are more sensitive than MRIs in demonstrating intracranial blood. An imaging study alone misses blood in as many as 5% of cases investigated within 1 or 2 days of a subarachnoid hemorrhage.¹ If any doubt remains about the origin of the headache, MR or conventional angiography should be performed.

Not only may the symptoms of small, noncatastrophic, subarachnoid hemorrhages from aneurysms or AVMs imitate migraine with nausea and vomiting, but such *sentinel headaches* may lack the usual signs and symptoms of subarachnoid hemorrhage, ie, neck stiffness may be absent, and the headache may subside over a period of hours. *Thunderclap headache*—a headache of startling suddenness—can have a benign origin and even be recurrent, but it can also be associated with an aneurysm that has not bled or with

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a subarachnoid hemorrhage. There are few, if any, characteristics to distinguish benign from symptomatic thunderclap headaches. A sudden-onset migraine attack (*crash migraine*, *blitz migraine*) is rare. It can occur, but it should not be first on a list of differential diagnoses. For this patient, subarachnoid hemorrhage must be ruled out before another diagnosis can be made.

The patient's visual and somatosensory symptoms are less problematic. She developed an aura for the first time after having suffered from migraine without aura for many years. There is no data about its frequency, but all physicians who treat large numbers of migraineurs see this phenomenon. Some individuals experience an aura before each and every migraine attack, whereas others have auras with only a small proportion of attacks. Some patients have only a few auras during their lifetimes. If the initial workup proves negative for hemorrhage or warning leak, and this patient has indeed had a migraine, there is no way to know whether or not this patient will have subsequent attacks with aura.²

As for the patient's visual aura having developed after her headache was in progress, this is also no particular cause for alarm once hemorrhage has been ruled out. While most patients who experience auras develop them before the head pain commences, auras may appear, or even recur, at the height of a headache. This patient is therefore far from unique. As in her case, visual auras are usually simple, typically consisting of flickering, colored or uncolored, unilateral or bilateral zigzag lines or patterns, semicircular or arcuate patterns, wavy lines, or irregular patterns.³ Elaborate scintillating scotomas are less frequent.

The somatosensory symptoms the patient developed after her visual aura can be viewed similarly. Auras of any type generally take between 5 to 40 minutes to develop to their peak, and usually last between 5 and 60 minutes. They last more than an hour in approximately 12% of cases.⁴ Typically only visual auras occur in isolation. Sensory, motor, and aphasic auras are not infrequently experienced in association with visual auras. In addition, patients often report progression of symptoms from one type of aura to another.⁵ Somatosensory symptoms are second in frequency to visual symptoms, and appear in approxi-

mately 35% to 40% of patients who have migraine with aura.⁶

One common type of somatosensory distribution involves the hand, face, and tongue (cheiro-oral or digito-lingual paresthesias). The paresthesias may march up an extremity, passing from one finger to another, to subsequently involve the whole hand. Most often the area of abnormal sensation begins in the fingers and then bypasses the arm and shoulder to involve the angle of the mouth, one half of the lips and tongue, the buccal mucosa, and the cheek. Some patients describe loss of sensation in various distributions that resembles those commonly seen in patients with stroke or transient ischemic episodes. In migraine, it is unusual for the numbness to be bilateral, although in some cases it may begin bilaterally and expand to involve both hands, all four limbs, the circumoral region, and both sides of the tongue.^{7,8}

The only other medical issue is Crohn's disease. The neurological complications of inflammatory bowel disease are rare—less than 3%.⁹ Inflammatory bowel disease is not comorbid with either migraine or cerebrovascular disease and presumably did not play a role in this patient's present illness.

In sum, if subarachnoid hemorrhage is ruled out by appropriate tests, the patient had her first episode of migraine with aura. The clinical presentation had several less than usual features, but all seem to fall within the realm of migraine.

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FOLLOW-UP

The following blood tests were normal: complete blood count with platelets, partial thromboplastin time, lupus anticoagulant, anticardiolipin IgG and IgM antibodies, rheumatoid factor, antinuclear antibodies, and erythrocyte sedimentation rate. An MRI scan of the brain and MRA of the brain and neck were normal. The patient declined a lumbar puncture.

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