ELSEVIER

CLINICAL CHALLENGES

PETER SAVINO AND HELEN DANESH-MEYER, EDITORS

Migraine and Anisocoria

Molly E. Gilbert, MD,[1] and Deborah Friedman, MD[2]

[1]Neuro-ophthalmology Service, Wills Eye Hospital, Thomas Jefferson University, Philadelphia, Pennsylvania; and [2]Departments of Ophthalmology and Neurology, University of Rochester School of Medicine and Dentistry, Rochester, New York, USA

(In keeping with the format of a clinical pathologic conference, the abstract and key words appear at the end of the article.)

Case Report. A 42-year-old woman was referred for neuro-ophthalmology consultation because of a 10-month history of headaches. Two to three hours prior to developing the headache, the patient developed anisocoria. The larger pupil was on the left. The patient reported that after developing anisocoria she developed left-sided periocular pain that evolved into a headache that could last for 2–3 days. Occasionally her vision was mildly blurred with the headache. The headache would slowly resolve and the pupils would return to being equal in size. The triggers for her headaches include lighting changes and they are relieved by Excedrin. She had been followed by a neurologist and had a negative MRI/MRA, sleep study, and extensive blood work all of which were unremarkable. She was diagnosed with migraine.

Past medical history was significant for anxiety and a benign breast biopsy, and sinus headaches. She was allergic to penicillin. Current medications included prochlorperazine, allegra, venlaxafine, and Excedrin PRN. She had a 25-pack per year smoking history. Family history was significant for breast cancer, multiple myeloma, diabetes, coronary artery disease, and macular degeneration.

On the day of her neuro-ophthalmologic examination visual acuity was 20/20 OD and 20/25 OS with a refraction of +3.00sph. OD and +3.50sph.OS. Her pupils were isocoric (equal-sized) and no relative afferent pupillary defect was noted. Slit-lamp examination was unremarkable with a deep anterior chamber. Visual fields were full to confrontation techniques and applanation tonometry revealed pressures of 10 mm Hg OU. Her fundus was unremarkable.

What further testing (if any) is required?

What migraine treatment would you prescribe?

Comments

Comments by Deborah Friedman, MD

There are several considerations when evaluating a patient experiencing headaches with neuro-ophthalmic features. Is this a primary headache disorder, such as migraine or cluster headache, or a secondary process? If there is a secondary cause for her headaches, can it be localized anatomically?

Some primary headaches are associated with anisocoria. For example, migraine, cluster headache, and other trigeminal autonomic cephalgias can be accompanied by a Horner syndrome. When the headache is one-sided, the Horner syndrome is ipsilateral to the pain. However, this patient has a large pupil on the ipsilateral side, not a small pupil; additionally, there was no ptosis (it is unlikely that there was undetected ptosis in this case, given the

0039-6257/07/$–see front matter
doi:10.1016/j.survophthal.2006.12.006

detailed observation of the pupillary abnormality). Episodic mydriasis can occur in the setting of migraine, often without a headache. Ophthalmoplegic migraine, now considered a cranial mononeuropathy rather than true migraine, produces pain with an ispilateral oculomotor nerve palsy, but this patient had no other evidence of a third nerve palsy, such as diplopia, ptosis, or an observed exotropia.

Further testing in patients with headaches is warranted if there are any "red flags" on the history or examination to suspect a secondary cause. Patients with a typical history for migraine, a normal neurologic exam, and no red flags do not need imaging. In this patient, the history as presented is not diagnostic of migraine. She has had a normal MRI and blood work, which were indicated with such unusual symptoms. Sleep disorders may produce headaches but not with a dilated pupil, so the rationale for this test under the circumstances is questionable.

When thinking about other testing that might be necessary in a headache patient, it is helpful to have more complete clinical information for direction. Therefore, my first "diagnostic test" is obtaining more history. Does she have sensitivity to light or noise during the headaches? Is there nausea or vomiting? Do the headaches worsen with activity, such as walking or climbing stairs? How frequently do they occur? Has she had fever or other systemic symptoms (e.g., weight loss, rash, arthralgias) to invoke an infectious or inflammatory process that could be diagnosed by a spinal fluid examination? Venlafaxine may produce headache as a side effect —is there a temporal relationship between the introduction of that medication and the onset of symptoms?

After obtaining more history, if I was convinced she has migraines, the treatment depends on the frequency and severity of the headaches. If the headaches are frequent and disabling enough to interfere with her life, preventive treatment could be considered. However, if they are infrequent, and respond to Excedrin, no additional treatment may be required.

Migraines are sometimes precipitated by exposure to bright light. Because it was stated in the case presentation that the light was the precipitating event, what are the exact lighting changes that provoke her symptoms?

Case Report (Continued)

The patient states that when she goes from dimly lit areas to more brightly lit areas her pupil appears larger. The headache typically starts within one to two hours of the development of anisocoria. The headache always resolves with the resolution of the anisocoria.

Comments (Continued)

Comments by Dr. Friedman

The specific observation of the lighting changes precipitating the headache and the headache's strict association with the anisocoria must raise the question of an ocular problem. While very infrequent, glaucoma may present as and be misdiagnosed as migraine. A full ophthalmologic evaluation, including gonioscopy should be performed.

Case Report (Continued)

Because of her high hyperopia, gonioscopy was performed, and no angle structures were seen. She then underwent ultrasound biomicroscopy (UBM) which revealed a plateau iris configuration (Fig. 1). A laser peripheral iridotomy (PI) OS was performed that day and she was referred to an ophthalmologist in her area to have the right iridotomy performed. She reported resolution of her headaches and the transient anisocoria after the bilateral PIs.

Discussion

The cause of this patient's headache was plateau iris with secondary subacute angle closure. Plateau

Fig. 1. Ultrasound biomicroscopy demonstrating anteriorly rotated ciliary body processes elevating the peripheral iris in plateau iris syndrome. ✧ = anteriorly rotated ciliary body processes pushing peripheral iris toward the angle. (UBM courtesy of Douglas Rhee, MD.)