

Case 41

History of Present Illness

A 60-year-old right-handed woman presented with bilateral eye pain. While she used to get “stress headaches” off and on earlier in her life, these headaches were dull, bi-frontal and temporal and behind her eyes. She noticed mild light sensitivity. While ibuprofen dulls the headache and eye discomfort now, the headache/eye discomfort continues daily. She thought she was having trouble with her glasses, and saw her optometrist who found a normal exam. The blurring continued and she noticed trouble with both horizontal and vertical diplopia with driving and reading. She has had more fatigue. She saw her optometrist again and had a visual field (Fig. 41.1) and she was referred for further evaluation.

<i>Past medical and ocular history</i> Anemia (mild) Osteoarthritis Hypothyroidism Wears glasses for reading Dry eyes (mild)	<i>Past surgical history</i> Tonsilectomy Cesarean section
<i>Medications</i> Ibuprofen 200 mg every 4–6 h prn Levothroxine Artificial tears	<i>Family history</i> Daughter—migraine Mother—arthritis, stroke, cancer, thyroid Father—hypertension
<i>Social history</i> Works as a chemist for a mining company Divorced with four children; no smoking but occasional alcohol use	<i>Review of systems</i> Per HPI

Examination

Acuity with correction

Right eye: 20/70

Left eye: 20/40

Pupils

Equal with a 0.9 log unit RAPD in the right eye

Color vision (HRR)

1/6 OD and 3/6 OS

Stereo vision

No fly; 0/3 animals; 0/9 circles

Intraocular pressure

Right eye: 12 mmHg

Left eye: 12 mmHg

External exam

Normal

Eye alignment

By Maddox rod she had one prism diopter Left hyper and two prism diopter of exophoria—which was comitant in all directions

Slit lamp examination

Normal except for mild bilateral nuclear sclerosis

Visual field

To confrontation: finger counting in all quadrants but red desaturations bitemporally. Formal visual fields showed a bitemporal hemianopia (see Fig. 41.1)

Fundus examination

Cup to disc ratio 0.8 OD and 0.5 OS

Neurologic examination

Normal except for decreased vibration in the right big toe, and mild pronator drift in the right arm

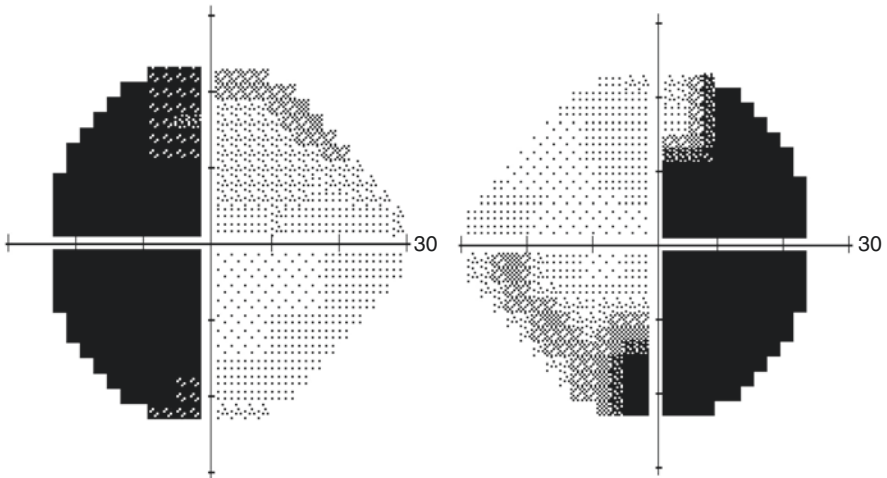


Fig. 41.1 Visual fields show a bitemporal visual field defect

Discussion

Neurologic Perspective—Dr. Digre

There were several clues in the history and examination that the eye pain point to the correct diagnosis. First, she had blurred vision that was not correctable with refraction and she had reduced color vision testing and a bitemporal hemianopia to confrontation with red colored balls. While she had mild nuclear sclerosis, this could not account for the visual field defect, or the reduced color vision. Second, her complaints of diplopia were associated with very mild abnormalities on Maddox Rod testing and this could be the phenomenon of hemifield slide in which the visual fields nasally can be affected by mild transient slips of a phoria or tropia which can cause variable diplopia. Third, her eye discomfort and bitemporal headache was associated with mild photophobia. Photophobia can be a presenting symptom of a pituitary tumor, and a new headache in an older person should lead to further investigation. So we are suspecting a lesion affecting the chiasm—perhaps a pituitary tumor.

The evaluation for a suspected pituitary tumor should be a dedicated MR of the sella region with sagittal, coronal, and axial views. Blood studies are also helpful to look for underlying endocrinologic findings: thyroid studies (T4 and Thyroid stimulating hormone [TSH], prolactin, growth hormone, Luteinizing hormone, Follicular stimulating hormone, testosterone). In our patient, her hormones were normal. So if this is a tumor, this was a non-secretory pituitary tumor.

Treatment when vision is threatened is either surgical removal often through a transphenoidal approach. If the tumor is not completely removed or if the vision is not correctable, then directed radiation is considered. Often post-operatively, individuals require hormone replacement and are at risk for the development of diabetes insipidus.

One of the dreaded complications of pituitary tumor is pituitary apoplexy or sudden bleed into a pituitary tumor. This is often heralded by a sudden onset of headache/eye pain or visual loss or both.

The cause of the headache and eye pain is probably related to the tentorial innervation (from branches off of V1) to the meninges and blood vessels around the sellar region. While there are no guidelines for the treatment of headache and eye pain related to pituitary tumors, non-steroidal anti-inflammatories such as naproxen 400–600 mg two to three times each day or meloxicam, diclofenac, or ibuprofen can be helpful. Headache and eye pain can worsen post-operatively, not just because of surgical changes, but fat packing that is generally used with the transphenoidal approach can transiently worsen compression on the tentorial nerves and increase the pain and discomfort. This generally resolves within 1 month and one can use non-steroidal medication to treat as listed above.

The prognosis is usually good for vision, especially if the optical coherence tomography (OCT) is normal as was the case in this woman. The headache generally resolves after tumor removal.

Ophthalmic Perspective—Dr. Lee

In most cases, we focus on the patient's chief complaint. The patient herein may have significant eye pain and minimize the blurry vision or the double vision, because this may be most concerning to her. Although this case seems straightforward, in an eye office, not all practitioners check color vision and pupils carefully. So, maybe we miss the optic neuropathy. Personally, I believe that anyone with uncorrectable visual acuity ought to undergo formal perimetry. It really tells you whether the patient has true disease or maybe this is something benign like refractive error. It can also help localize vision loss as in this case.

The double vision here is a red herring. The comitant (same in all directions) nature suggests that this is a pre-existing misalignment that is breaking down. However, it might have led a physician to order an MRI and they would have found a chiasmal lesion by "accident."

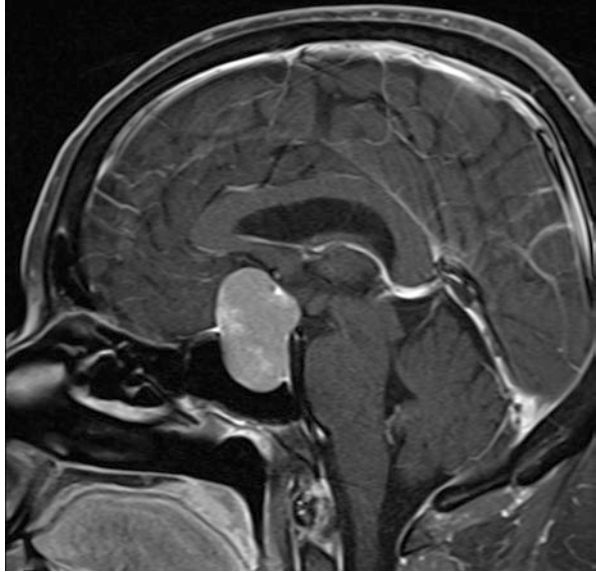
Non-ophthalmic/Non-neurologic Perspective

A patient complaining of eye pain and blurred vision should have their visual acuity checked in each eye separately. For confrontation visual fields, the patient covers one eye and the examiner shows the patient two red objects in two different locations simultaneously and asks if they appear similar. The examiner can also hold up different fingers in different quadrants and ask the patient to add them. If one finds a reduced visual field in the temporal (toward the ear) hemifield in each eye, this could suggest a chiasmal issue such as a pituitary tumor.

Follow-up

She had an MR scan which showed a large pituitary tumor compressing the right optic nerve (Fig. 41.2). Our patient underwent tumor resection through a transphenoidal approach. Her vision gradually improved. Her headache worsened shortly after surgery for a short while, but later improved. *Final diagnosis: Eye pain secondary to a pituitary adenoma.*

Fig. 41.2 Sagittal MRI shows an enhancing sellar mass extending into the suprasellar space



For Further Study

1. Greenman Y, Stern N. Optimal management of non-functioning pituitary adenomas. *Endocrine*. 2015;50(1):51–5.
2. Kawasaki A, Purvin VA. Photophobia as the presenting visual symptom of chiasmal compression. *J Neuroophthalmol*. 2002;22(1):3–8.
3. Lake MG, Krook LS, Cruz SV. Pituitary adenomas: an overview. *Am Fam Physician*. 2013;88(5):319–27.