TITLE: For Crying Out Loud! Unilateral Epiphora Reveals Unexpected Macular Hole and Pituitary Tumor

ABSTRACT: A 68 year old male presented with excessive tearing and blurred vision in the left eye. Confrontational visual fields and dilated fundus exam revealed both homonymous inferior hemianopsia and macular hole. Neuroimaging confirmed pituitary adenoma.

I. Case History

A 68 year old Caucasian male presented for a comprehensive eye exam stating his left eye was constantly watering. The patient reported a history of punctal irrigation and dilation in the left eye. Interestingly the patient also complained of blurred vision in the left eye, like looking through water, and blinking more frequently over the past five months to help focus vision in the left eye. The patient’s last eye exam was five year ago. The patient reported symptoms began soon after he had a sinus cold. The patient used +2.00 OTC readers and took Refresh Optive lubricating artificial tears two-three times per day but was not on any systemic medications. He denied any previous eye trauma or eye surgery. He reported no medication allergies. The patient denied pain and was alert and oriented to time and place during the eye exam.

II. Pertinent findings

Entering uncorrected visual acuities were 20/30- OD and 20/70 OS at distance and 20/40 OU at near. Manifest Refraction revealed little improvement with +1.00 - 1.25 x 085 OD and – 0.25 – 1.25 x 085 OS and VA’s 20/30- and 20/60-, respectfully. The patient’s pupils were both equaly round and reactive to light without evidence of an APD. A minimal exophoria was observed on cover test. Confrontation visual fields seemed to illicit a right inferior homonymous quadranopsia. When questioned, the patient was unaware of this visual field loss and denied headache, paraesthesia, diplopia, or tinnitus. Patient’s blood pressure was 112/65 with a pulse of 61 at 8:55 am. Icare tonometry was 14 mmHg OD, OS at 8:57 am.

Anterior segment did reveal a stenosed puncta of the left lower lid with blocked drainage of the left nasolacrimal system confirmed by the Jones I Dye Test. Tear film was mild reduced OD to 8 sec while epiphora was noted OS. Lids, lashes, conjunctiva and cornea were unremarkable OU. The anterior chamber was open to 4 by Van Herick estimation OU and the iris was flat OU. Lenses OU revealed moderate 2+ nuclear sclerotic changes.
with trace to 1+ cortical changes noted OU.

On dilated fundus examination the vitreous was clear and the optic nerves were pink with intact neural retinal rim OU. The macula of the right eye was flat with early mottling changes and few scattered drusen suggestive of dry age-related macular degeneration. The left eye also presented with mottling and drusen, but a prominent parafoveal epiretinal membrane puckering with red foveal zone and poor discrimination of Watzke-Allen Sign. Retinal vasculature was unremarkable and peripheral retina was flat without holes, tears, or detachments 360°.

Humphrey Visual Field 24-2 confirmed a larger inferior homonymous hemianopsia defect OU and optical coherence tomography (SDT-OCT) confirmed the left eye indeed had a full-thickness loss of foveal retina.

The patient was alerted to the concerning findings and need for immediate neuroimaging to confirm mass or ischemic lesion. An MRI of the brain with and without contrast was ordered concentrated at the optic chiasm. However, the patient reported he felt he was poorly positioned in the visual field machine and that may have given a false field defect. The patient was assured the test indices were reliable but a repeat VF would be done upon receiving the MRI results at the next immediate follow-up to the patient’s agreement. The patient was also scheduled to have punctal irrigation of the left nasolacrimal duct at that time as well.

III. Differential diagnosis
While the patient’s chief complaint was the tearing OS, the homonymous visual field defect took clinical precedence.

Differential Diagnoses for the Visual Field Defect included:
Glaucoma
Neurological Disease:
  • Chiasmal vs. Occipital Lob Lesion
    o Compressive Lesion
    o Ischemic Lesion

Other differentials for this patient encounter resulted from the macular defect in the left eye and the original epiphora complaint OS.

Macular Defect Differentials:
Macular Hole
Macular Pseudohole/Lamellar Hole
Vitelliform Macular Dystrophy
Central Serous Retinopathy

Epiphora Differentials:
Dry Eye Disease
Punctal Stenosis/Nasolacrimal Duct Obstruction
Ectropion
Dacryocystitis

IV. Diagnosis and discussion

When it comes to optometry, excessive tearing and blurred vision are two of the most common patient complaints. While diagnosis of these conditions can range from straightforward to complicated, it’s when a serious but asymptomatic finding—such as the visual field defect in this patient case—that can be most representative of primary care optometry.

Two days following the patient’s initial exam, punctal dilation and irrigation were performed OS without incident almost immediately resolving the epiphora in that eye. The patient repeated the HVF 24-2 with the same inferior hemianopsia outcomes. The radiology report of the MRI confirmed a large mass effect suggestive of a pituitary adenoma pushing along the sellar region of the optic chiasm. The patient was immediately sent to a neurosurgery clinic for further endocrinology laboratory testing and tumor resection, as appropriate. The patient was advised and he agreed that given the circumstances any retina consult in preparation for macular hole repair in the left eye should be postponed until care for the neurological condition was completed.

Pituitary adenoma is one of the most common causes of homonymous hemianopsia and may present at any age among both genders.² The tumor is classified based on size as either a microadenoma (<10 mm) or a macroadenoma (>10 mm). The pituitary gland produces a variety of hormones, and as such a pituitary tumor may be secretory or nonsecretory.¹ The type of tumor determines the initial treatment strategy. A visual field defect due to pituitary adenoma ordinarily shows a bitemporal hemianopsia. Yet, what is unique to this case was the presentation of inferior hemianopsia that respected the horizontal, which is more suggestive of a lesion in the optic radiations or occipital lobe.⁵

Of most concern in cases of pituitary adenoma are the risks for pituitary apoplexy if not urgently treated. This is a life-threatening acute hemorrhage or infarction of the tumor.³⁴ Reported incidence varies between 0.6% and 10% of all pituitary adenomas and most cases occur spontaneously.²³ Presenting clinical features include severe headache, nausea, and altered mental status with vision loss, diplopia, and multiple cranial nerve palsies secondary to rapid expansion of blood into adjacent cavernous sinuses.¹³⁶ Cranial nerve III the most commonly affected.³⁴⁵ Subarachnoid expansion of blood may lead to vasospasm, stroke, and fatal adrenal crisis.¹

V. Treatment, management
The prevalence of pituitary adenoma in the general population is about 17%.⁶ Many cases
are asymptomatic. While optometrists are clinically astute at determining lesions affecting the visual pathway, the process of treatment and management are often outside their scope of practice. Nonetheless it’s important for optometrists to understand the current management protocol and counsel worried patients.⁶

Surgery, radiation and medical therapy are all options for treating pituitary adenomas. However treatment depends upon the patient’s age and health—as well as the tumor’s size, invasiveness and degree of hormone production.⁶ Yet when a pituitary tumors causes visual field defects, the surgical option by inpatient, endonasal route is most widely accepted. Studies have demonstrated visual improvement post surgical or medical therapy can be dramatic, with the greatest degree of improvement occurring in the first few months. At the time of this case report submission, the patient had yet to follow-up at the optometry office for his four-month postoperative evaluation. Nonetheless, HVF assessment would be completed at that time and was scheduled to occur in the next month.

In the meantime, the patient did attend his referral appointment to the retina specialist three months after his tumor resection. At that time, the retina specialist also confirmed the previously diagnosed left eye epiretinal membrane and full-thickness macular hole. Due to the still recent tumor surgery however, the patient deferred macular hole repair surgery at this time and was scheduled to follow-up with the retina specialist in three weeks. Tentative surgical repair of the macular hole would include pars plana vitrectomy (PPV) with membrane peel and tamponade.⁷ Outcomes tend to be favorable with PPV, especially with better preoperative visual acuities.⁷

VI. Conclusion

In a hectic clinic day, it’s important to remember that patients can, and often do, have more than one ocular condition affecting them. Therefore, it is advantageous for optometrists to be the primary eye care providers and refer patients to the correct medical specialist that can best care for the patient’s systemic and or advanced ocular condition. Simply because a patient doesn’t complain of an issue doesn’t mean there isn’t an underlying pathology. As optometrists, we are equipped with the skills to provide more for our patients beyond what lies behind the slit lamp, and should never take for granted simple tests like confrontational visual fields and the immeasurable amount of information can reveal to clinicians about a healthy or diseased visual pathway (and in some cases, much more than the retina can!). As primary eye care providers each encounter should be focused on early detection of disease, appropriate referral, knowledge of treatment options, and compassionate care.
Bibliography (Further Completion to Follow With Final Paper/Poster)

7. http://eyewiki.aao.org/Macular_Hole#Differential_diagnosis