Case 15

History of Present Illness

A 64-year-old Hispanic woman with a history of mixed connective tissue disease and possible rheumatoid arthritis presented with severe eye pain and visual loss. She had previous headaches as a young woman but had none until about 3 months ago, when she began to have pain around her left eye and left side of her head. The pain has steadily increased and is worsened with movement. She had light sensitivity in that eye and preferred to have the left eye closed. She also has had some mild tearing on the left side with the severe pain. About 1 month ago she noticed decreased vision in her left eye. She thinks her visual loss is getting worse. She may have had a cold the week before the onset of her symptoms.

Past medical and ocular history Diabetes for many years—Type II Anemia Hypertension Hypothyroidism History of Bell's palsy	*Past surgical history* Lung biopsy for hemoptysis showed pulmonary vasculitis 5 years before; she had been on methotrexate and prednisone in the past—Now none for long period of time
Medications Albuterol inhaler Benazepil Glipizide Metformin	*Family history* Negative
Social history Married, works as a cleaning lady; three children; does not speak English; never smoked; no alcohol	*Review of systems* Fatigue

M.S. Lee, K.B. Digre, *A Case-Based Guide to Eye Pain*,
https://doi.org/10.1007/978-3-319-65121-7_15

Examination
Acuity with correction Right eye: 20/25 Left eye: 20/400
Pupils 2 mm OD and 2.5 mm OS in light 4 mm OD and 3.5 mm OS in darkness 1.2–1.5 log u RAPD in the left eye
Color vision (HRR) 9/9 OD 0/9 OS
Stereo vision None
Intraocular pressure Right eye: 19 mmHg Left eye: 19 mmHg
External exam 2 mm ptosis on the left
Exophthalmometry (Hertel) 18 OD and 21 OS at a base of 99 mm (Fig. 15.1) Mild resistance to palpation on the left
Eye alignment and motility 35 diopters of exotropia with limitation of adduction, elevation
Slit lamp examination Mild blepharitis OU with Meibomian glad dysfunction OU. Mild conjunctival injection OU; anterior chamber no cell; nuclear sclerosis OU and cortical cataract mild; no vitreal cell
Visual field OD: Normal; central scotoma on the left with constriction and depression
Fundus examination Normal OU with no edema or pallor; 0.2 c/d ratio; mild retinal artery attenuation
Neurologic examination Normal except for a very mild postural tremor on outstretched arms; corneal sensation intact
Optical coherence tomography Minimal decrease in RNFL OS

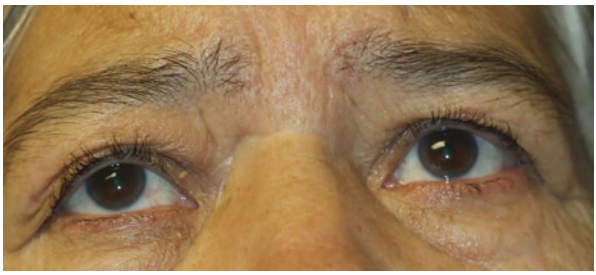

Fig. 15.1 External photograph shows proptosis of the left eye

Discussion

Neurologic Perspective: Dr. Digre

Because of the loss of vision, pain and proptosis, imaging must be done to determine where the problem is. The possibilities are orbital apex (with visual loss and partial cranial nerve 3, 4, 6), less likely superior orbital fissure, which may not have visual loss, and cavernous sinus, which would have multiple cranial nerve including V1 and V2 involvement. The fact that her corneal reflex was intact and that she did not have a sixth nerve palsy, I was thinking orbit not cavernous sinus. In these cases, careful cranial nerve examination is also important—especially the fifth nerve (check the corneal reflex) and fourth and sixth. She looked a little like a partial third nerve palsy, but it certainly was not complete. All of her other eye findings—meibmonian gland dysfunction and dry eye would not account for visual loss or this much pain.

Anytime there is pain and proptosis, it is important to think about an orbital lesion. The most common cause of proptosis is thyroid disease, but there is too much pain for that. In a diabetic, we worry the most about sinus disease especially an infection such as orbital mucormycosis or other fungus like aspergillosis. Fungal infections, unless treated promptly, could potentially kill the patient, so urgent evaluation is required. Orbital cellulitis usually is associated with more flagrant edema around the eyelids, which our patient did not have. Orbital tuberculosis could also be considered.

I would get an MR scan with orbital views and fat saturation and based on these findings, decide what to do. Is the mass in the orbit alone or in the sinuses is the first question. If in the sinuses, consider a referral to ENT for endoscopy and biopsy and culture. If it is in the orbit, the characteristics of the mass may be helpful. Many slow growing tumors do not usually cause pain but can cause visual loss and proptosis. The pain here suggests that this is either quickly growing or an invasive lesion—such as a metastatic tumor (breast in women and lung in men are most frequent). Lymphoma while normally painless is also a consideration.

Other things to consider would be inflammation. Sarcoid must be on the differential diagnosis since it can cause visual loss, but does not always cause pain. She did have pulmonary vasculitis 5 years ago, so this could also be inflammation such as granulomatosis with polyangitis (GPA, formerly known as Wegener's granulomatosis). Giant cell arteritis can rarely present as proptosis and visual loss. Idiopathic inflammatory disease is also a possibility.

An urgent MR scan was ordered. We also ordered laboratory studies: CBC, Chem 27, Hemoglobin A1C, ESR, c-ANCA and p-ANCA, and C-reactive protein.

Ophthalmic Perspective: Dr. Lee

Notice in the history that proptosis was not something about which she complained. I would say that most folks do not notice this when they have ptosis as well, since the eyelids mask this appearance unless it is extreme. Even if her lid were in a normal position, she may not make much of it. However, if the eyelid were retracted, patients

often describe that as bulging. Many people are a bit asymmetric and studies of Hertel exophthalmometry show that a 1 mm difference is acceptable; uncommonly, normal individuals have up to 2 mm difference and anything more than that is likely pathologic. The patient here has 3 mm of difference. One way to distinguish between a restrictive process vs. a cranial neuropathy is the speed of the saccades. If you ask the patient to adduct quickly, then a restrictive process will have a quick saccade but limited excursion, and a cranial neuropathy will have a slowed saccade.

I would agree that neuroimaging is warranted. MRI may be the same or better than a CT orbit, but CT would be an acceptable first step since they are so easy and quick to get. CT will also help us identify bony destruction, which could suggest a malignancy with a solid tumor. In this case, I would advocate for contrast especially as infection is on the differential.

Other potential tests would include serum IgG4, Lyme, Ehrlichiosis, and a urinalysis, but a lot of it depends on what the imaging shows.

Non-ophthalmic/Non-neurologic Perspective

For a primary care physician, the most important thing is to recognize proptosis. First view the patient while seated from above or the worm's eye view—does one eye appear proptotic? Second is to recognize visual loss. Besides the patient's complaint—check visual acuity and look carefully for a relative afferent pupillary defect. If present, this patient needs further evaluation with imaging and probably a neuro-ophthalmology consult.

Follow Up

The MR scan showed a large mass engulfing the orbit involving the optic nerve (Fig. 15.2). There was no evidence of naso-sinus disease. Because of the progressive visual loss, a biopsy was obtained. She was also placed on prednisone after the biopsy and she was supposed to return, but she went to visit relatives in Mexico. The biopsy showed inflammation consistent with but not diagnostic of GPA. Quantiferon Gold was negative, ESR and CRP were elevated. Her pANCA and cANCA were positive—this is GPA of the lung and orbit. About 6 weeks later she returned, and on prednisone her Visual acuity was 20/25 + 3 OD and 20/30 OS and her motility completely normalized, she still had an RAPD OS but it had become smaller, and she had no ptosis. Her visual field had also improved. She is followed by rheumatology and monthly Rituximab and tapering steroids. A follow-up MR scan shows the left mass in the orbit and also a mass developing on the right side as well. *Final diagnosis: orbital mass from GPA*.

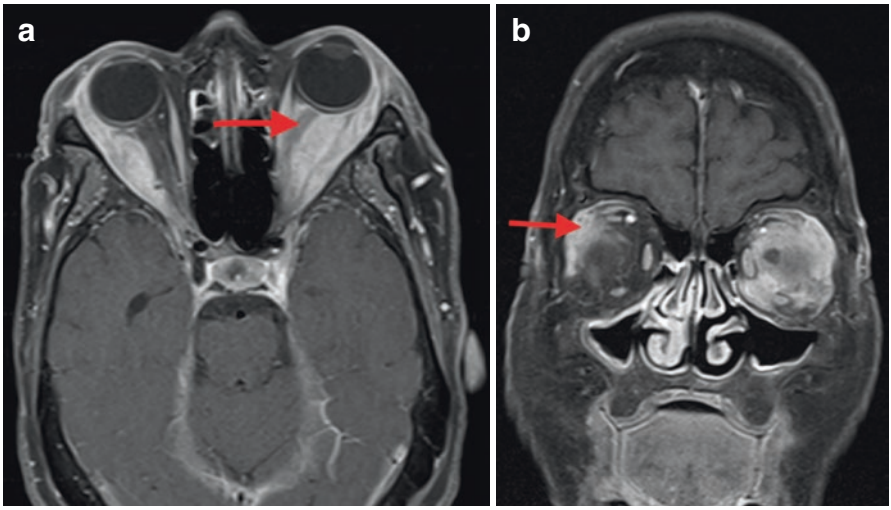

Fig. 15.2 MR scan axial and coronal views. (**a**) Axial view: This is a T1 fat saturated view with gadolinium enhancement. Notice the normally black fat is replaced by diffusely enhancing mass bilaterally. On the left side the left optic nerve is displaced (*arrow*). (**b**) Coronal view, fat saturated with gadolinium enhancement shows complete loss of the fat by an infiltrating mass on the left and enhancement especially around on the lacrimal gland on the right (*arrow*)

For Further Study

1. Bitik B, Kılıç L, Küçükşahin O, Şahin K, Tufan A, Karadağ Ö, Pay S, Ateş A, Ucar M, Tutar H, Karaaslan Y, Yilmaz S, Ertenli AI, Konuk O, Turgay M, Goker B. Retro-orbital granuloma associated with granulomatosis with polyangiitis: a series of nine cases. Rheumatol Int. 2015;35(6):1083–92.
2. Heier JS, Gardner TA, Hawes MJ, McGuire KA, Walton WT, Stock J. Proptosis as the initial presentation of fungal sinusitis in immunocompetent patients. Ophthalmology. 1995;102(5):713–7.
3. Siddiqui S, Kinshuck AJ, Srinivasan VR. Orbital apex syndrome secondary to granulomatosis with polyangiitis. BMJ Case Rep. 2013;2013 pii: bcr2013009519.
4. Singh M, Singh U, Zadeng Z. Orbital presentation of systemic vasculitis: a diagnostic and management challenge. Nepal J Ophthalmol. 2015;7(1):65–8.
5. Shovlin JP. Orbital infections and inflammations. Curr Opin Ophthalmol. 1998;9(5):41–8.