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Prepared for the Worst: a Case of Homonymous Hemianopia

A commercial airline pilot with remarkable health presents with apparent sudden loss of left side of vision. HVF reveals left homonymous hemianopia. Neuroimaging, resection and biopsy reveal a large, parietooccipital, Grade III meningioma.

I. Case History

Patient demographics: 62 year old caucasian male.

Chief complaint: Apparent sudden loss of left side of visual field.


Medications: Denied taking any medications.

Other salient information: International pilot for a commercial airline.

II. Pertinent findings

Clinical: VA: 20/20 OD, OS, OU. Normal EOM, color vision and stereo. PERRLA (-) APD. SLE, DFE including ONH appearance were unremarkable. HVF showed congruent left homonymous hemianopia.

Physical: Left hemiparesis.

Laboratory studies: N/A

Radiology studies: MRI showed a large right parietooccipital mass, described as a parasagittal falcine-based meningioma with invasion of the sagittal sinus.

III. Differential diagnosis

Primary/leading: Prior to imaging, the primary differential of a homonymous hemianopia was stroke, as roughly 70% are caused by cerebral infarct or hemorrhage leading to stroke.
Others: However, in an otherwise healthy patient, brain tumor resulting in homonymous hemianopia was considered. The patient denied recent head trauma and past neurological procedures, leaving the other common causes low on the differential list.

IV. Diagnosis and discussion

Neuroimaging of this patient presenting with complaint of left visual field loss with confirmation of a homonymous hemianopia on HVF revealed a large right parietooccipital meningioma, with later resection and biopsy confirming Grade III/anaplastic meningioma.

Meningiomas represent 26% of all primary brain tumors, making them the second most common CNS tumor in adults. Biopsy of roughly 80% of meningiomas reveal benign tumor, however atypical (grade II) meningiomas are reportedly found in 5-15% of cases while anaplastic (grade III) meningiomas are diagnosed in only 1-4% of patients.

Anaplastic (grade III) meningiomas, also referred to as malignant meningiomas, are aggressive tumors that tend toward invasion of nearby brain tissue. In addition to their aggressive nature, the rate of recurrence in anaplastic meningiomas are also highest among the subtypes, at over 70% recurrence after resection. Thus, radiotherapy is highly suggested after resection in anaplastic meningiomas.

V. Treatment, management

Neurosurgical referral led to craniotomy and complete resection of the tumor due to the location and suspicion of malignancy.

Regular follow up after resection with MRI every 3 months and HVF every six months was deemed necessary to monitor post resection. Post operative visual field showed vast regression of the defect, as well as subjective "immediate" resolution per patient history.

However, post operative imaging showed residual tumor at the sagittal sinus, which was treated with gamma knife radiosurgery. Visual field post resection and gamma knife showed only a small, left inferior homonymous defect.

Due to the high level of functionality regained through resection and gamma knife treatment alone, this patient did not require optometric aid with yoked prism or referral for vision therapy and rehabilitation.

Bibliography


VI. Conclusion

It is not uncommon for an optometrist to be confronted with a patient presenting with either complaint or ancillary finding on CVF of a visual field defect. Thus, it is vital to be familiar with the necessary diagnosis, referral and comanagement protocol for various distinct visual fields defects.

In the case of a homonymous hemianopia, optometrists should be highly suspicious of stroke, especially in patients with high risk factors. However, patient counseling upon visual field review and prompt referral for neuroimaging should not exclude the possibility of other lesser, yet not uncommon, causes of such distinct defects. Head trauma and iatrogenic causes should be questioned in the history, and possibility of intracranial mass should be not be ignored.
The patient reviewed in this case was fortunate to regain a large portion of his visual field after treatment, thus comanagement with optometry will only include regular monitoring with visual field every six months due to the high likelihood of recurrence with Grade III meningioma as well as the nature of the patient's profession as a commercial airline pilot. However, in less fortunate cases with persistent and debilitating visual field defect, studies show the benefits of optometric treatment with yoked prism and guided vision rehabilitation to maximize functionality.