

> THE PATIENT

21-year-old woman

> SIGNS & SYMPTOMS

- Frontal headaches
- Periocular discomfort
- Blurred vision

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> THE CASE

A 21-year-old woman who wore glasses for mild hyperopia presented to our ophthalmology clinic with a recent history of frontal headaches, periocular discomfort, and blurred vision in both eyes—especially the left eye. Her corrected visual acuities were 6/5 (20/16) and 6/60 (20/200) right and left, respectively. Her symptoms were constant but became worse after reading. She had no prior ocular or medical history.

Prior to this visit, she had recently been admitted to 2 hospitals on 3 occasions for the same complaints. She had undergone noncontrast magnetic resonance imaging (MRI), which revealed 2 arachnoid cysts that were deemed not clinically relevant. She'd also had an MRI with contrast of the head, orbits, and cervical spine; the results were within normal limits. Numerous blood tests were done, including a complete blood count, random blood glucose, renal function, thyroid function, C-reactive protein, serum calcium, serum magnesium, aquaporin-4 antibodies (for neuromyelitis optica), and antibodies for Leber's hereditary optic neuropathy. All results were normal. She'd also undergone a lumbar puncture and her cerebrospinal fluid was normal. Visual evoked potentials also were normal. Her physicians suspected optic neuropathy and she was referred to our ophthalmology clinic for further evaluation.

THE DIAGNOSIS

At our clinic, we noted that her color vision was normal, there was no relative afferent pupillary defect (RAPD), and she had a full visual field after confrontation visual field testing. Slit lamp examination, including dilated ophthalmoscopy, was normal and her optic discs were healthy.

We performed a refraction test and discovered that her hyperopia was inadequately corrected and her current prescription required updating. This was the cause of her poor vision. Her most recent refraction test had been 26 months ago, when her current glasses had been prescribed. The result of this had been +1.00/+0.5×180 (right eye) and +0.75/+0.25×175 (left eye). The results of the refraction test in our clinic was +1.75/+0.25×160 (right eye) and +1.50/+0.5×165 (left eye), indicating that she had become more farsighted. Following refraction, her corrected distance visual acuity was 6/5 (20/16) in both eyes and corrected reading vision was normal.

DISCUSSION

Undiagnosed refractive error is the most common cause of remediable visual impairment and can have serious functional consequences.¹ It should always be considered in the differential diagnosis of blurred vision. It is estimated that 285 million people are visually impaired; the main cause for approximately 43% of them is uncorrected refractive error.²

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Evaluating a patient with visual loss involves a thorough history and examination.³ Assessment of visual acuity should be performed with and without the patient wearing his or her glasses. During this patient's hospitalizations, her acuity assessments were always conducted while she was wearing her glasses, but neither a pinhole test nor formal refraction by an eye care specialist had been conducted.

■ **The pinhole test** involves directing a patient to look at a visual acuity chart, one eye at a time, through a pinhole. If the patient's visual acuity is reduced by refractive error, the pinhole acuity will be significantly better than the unaided acuity. If the reduced acuity is due to ocular pathology, there is typically no improvement in visual acuity with the pinhole.

There are, however, some limitations of pinhole testing. In macular degeneration the pinhole acuity is frequently worse than the unaided acuity. And in cases of high myopia or high hyperopia there is limited improvement in the acuity with the pinhole. Errors outside the range +4 dioptres (D) to

-4D sphere are not corrected to 20/20 with a pinhole.⁴

■ **Other signs of optic neuropathy were not present.** In addition to reduced visual acuity, a patient with an optic neuropathy may have one or more of the following:³

- RAPD
- reduced color vision
- a visual field defect
- swelling or pallor of the optic nerve head.

As noted earlier, our patient had none of these signs or symptoms.

THE TAKEAWAY

Refractive errors should be considered in the differential diagnosis of blurred vision and a formal refraction should be conducted. In our experience, clinicians who do not commonly manage refractive error (eg, neurologists) may overlook this in the differential diagnosis when a patient's symptoms are relatively recent in onset and he or she already has glasses. JFP

References

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