



Disorders of Vision and Hearing

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DISORDERS OF VISION AND EYE MOVEMENTS

Examination of the Visual System

Acuity

The clinical examination of visual function should begin with testing visual acuity. Patients who wear corrective lenses should wear them during testing, and testing should be performed using a Snellen chart at a distance of 20 feet (Fig. 112-1). The smallest line the patient can read is documented as the visual acuity; for instance, acuity of 20/40 refers to letters that the patient sees maximally at 20 feet, which a normal individual can see at 40 feet. When errors of refraction are responsible for decreased visual acuity, vision may be improved by having the patient look through a pinhole. Corrected vision in one eye of less than 20/40 suggests damage to the lens (cataract) or retina or a disorder of the anterior visual (prechiasmatic) pathway. Color vision in each eye

should also be tested using Ishihara color plates; even when visual acuity is normal, patients with lesions of the optic nerve may complain that colors appear “washed out” in the affected eye.

Visual Fields

Thorough examination of the visual fields can often localize lesions interrupting the afferent (sensory) visual system (Fig. 112-2). Visual fields in all four quadrants should be tested by comparing the patient’s field with that of the examiner (confrontation). The examiner’s head should be level with that of the patient’s, and a white pin used to map peripheral visual fields and a red pin to assess for the presence of a scotoma. Asking the patient to count the number of the examiner’s extended fingers is more sensitive than presenting moving objects in detecting visual field deficits. The field should be tested first unilaterally and then bilaterally because uncovering a defect (particularly in the left hemifield) with bilateral testing only (extinction) suggests a lesion in the contralateral parietal lobe.

Partial or complete visual loss in one eye only implies damage to the retina or optic nerve anterior to the optic chiasm, whereas a visual field abnormality involving both eyes implies a defect at or posterior to the optic chiasm. *Scotomas* are areas of partial or complete visual loss and may be central or peripheral. Central scotomas result from damage to the macula. A scotoma affecting one half of a visual field is known as a *hemianopia*. Field defects are said to be *homonymous* if the same part of the visual field is affected in both eyes; a homonymous hemianopia implies a post-chiasmatic lesion. A homonymous defect may be *congruous* (the visual defect is identical in each hemifield) or *incongruous* (the visual defect is not identical in each hemifield).

Quadrantanopias are smaller defects in the visual field and may be superior (which suggests a temporal lobe lesion) or inferior (which suggests a parietal lobe lesion). Bitemporal hemianopia implies a lesion at the chiasm, such as a pituitary tumor. An altitudinal hemianopia occurs with vascular damage to the retina. Scintillating scotomas are hallucinations of flashing lights. If they are monocular, they may be caused by retinal detachment; binocular scintillations suggest occipital oligemia (as in migraine) or seizure. Any suspicious findings on bedside confrontation testing warrant formal visual field testing using perimetry (Fig. 112-3).

Pupils

Examination of the pupils should begin with observation of pupillary size and shape at rest. Pupil constriction is mediated by the parasympathetic system of the oculomotor (third cranial) nerve,

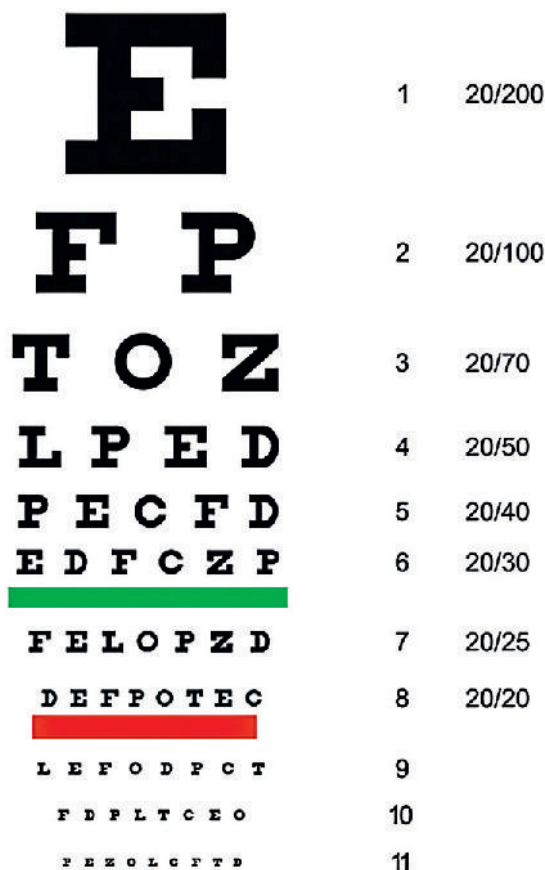


FIGURE 112-1 Snellen Chart.