Cleveland Clinic Quarterly
Volume 37, April 1970

Visual-field testing without special equipment

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A GREAT many situations make visual-field testing in a refined manner by perimeter or tangent screen instruments impractical or impossible. The patient may be too ill to be moved to the machines and testing rooms, or too ill to sit up or otherwise cooperate with the use of the instruments. Since important information may be derived from examinations of visual fields, there is a need for a simple, bedside or office method of testing visual fields which requires no special instruments. This report reviews such simple tests.

Confrontation test

A finger, a cotton-tipped applicator stick, or a hatpin of a specific color is moved in a frontal plane between the examiner and the patient and at equal distances from both. The examiner, staying at arm's length from the patient, closes one eye and covers the patient's opposite eye with his hand while making sure that the patient gazes constantly at the examiner's open eye rather than moving his gaze about to look for the target object. The examiner's finger is moved inward from various points outside the patient's field of view and the patient is asked to say "Yes" as soon as he catches the faintest glimpse of it (*Fig. 1*). This is repeated at intervals around the patient's field of vision—first for one eye and then for the other—to note any defects of visualization. Refinements can be made by using smaller and less bright objects or, perhaps even preferably, variously colored objects to test for small central visual field defects. If the vision is generally poor the testing can be done with lights.

The confrontation test as described can be a valuable diagnostic procedure, but it takes practice and time, there being difficulties in keeping the finger moving in the same plane at the same distance from the patient's eye. When the patient is incapable of quick intelligent responses, the testing may take many minutes. However, the time involved is less than with testing by perimetric or tangent screen instruments.

The finger-waggle test

Undoubtedly the quickest visual field test ever devised is the finger-waggle test. The examiner waggles his index fingers simultaneously and synchronously—one close to each of the patient's temples, and moves the fingers forward ascertaining whether the patient can see one or both moving fingers (*Fig. 2*). A key element is the simultaneous bilateral sensory stimulus that can bring out subtle deficits, as has been noted with various forms of simultaneous

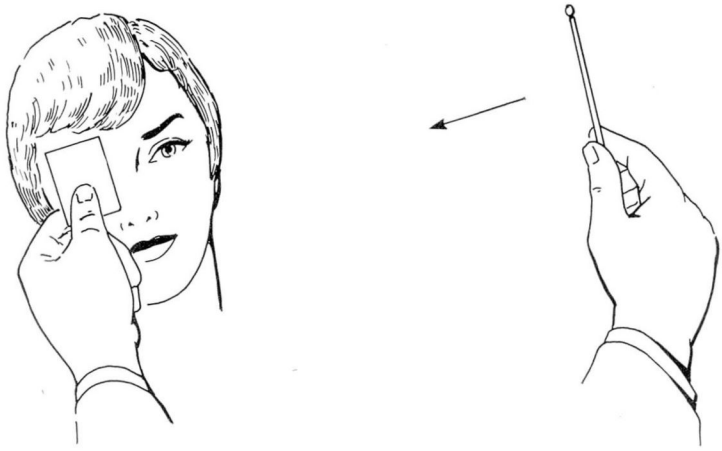

Fig. 1. Sketch showing the standard confrontation testing method. The examiner covers one of the patient's eyes and closes his opposite eye and, making sure that the patient keeps her open eye looking at his open eye, he moves the stick into the patient's field of vision along multiple meridians. The examiner is careful to keep the object equidistant from the patient and himself so that he can use his own visual field boundaries to compare with the patient's.

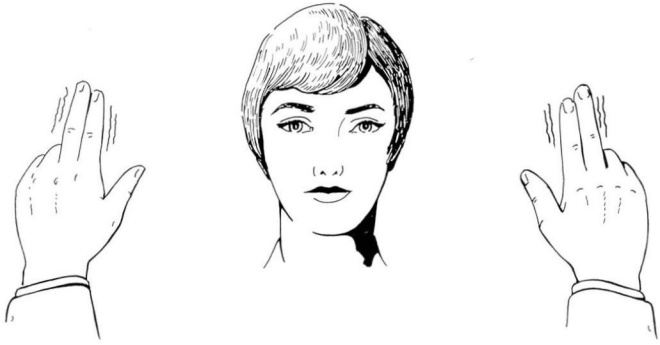

Fig. 2. Sketch showing the finger-waggle test. The examiner's moving fingers are brought forward from alongside the patient's temples, and the patient is asked to indicate when she can see the movement on either side.

sensory stimulation in other situations (e.g., in touching both wrists at the same time a patient may "neglect" to feel the touch on the left wrist as a result of otherwise undetected malfunction of the right parietal lobe).

As Gardner[1] has stated, mild disorder of intracranial visual pathways may be detected in this way only, and the test becomes extraordinarily important in such problems as the diagnosis of subdural hematoma, when focal deficits of any kind are usually elusive until it is almost too late to salvage the patient.

Gross hemianopsia or quadrantanopsia is virtually never missed with the finger-waggle test in a patient who can respond in a meaningful fashion to

what he sees. Ordinary perimetry performed separately for each eye will not uncover a faint or "relative" hemianopsia that could be identified with simultaneous bilateral finger waggling, and the test should be performed whether or not the visual fields are evaluated by means of formal perimetry. Visual "inattention" may be found only by means of simultaneous sensory stimulation.

Gardner[1] also has emphasized that an aphasic patient usually is quick to indicate whether he can see the movement on either side. Nearly all other tests tend to fail in regard to patients who have problems in communication.

Kestenbaum's outline perimetry test

Another modification of the confrontation test uses the outlines of the patient's face as marks for the normal visual field; in the usual confrontation test, the examiner's own field is used for comparison. Kestenbaum[2] found that the retinal field for ordinary objects coincided with that field that is defined by the outlines of the individual's facial structures when the eye looks straight ahead. The shape of the retinal field depends upon the shape of the nose and orbital margins. The prominent upper orbital ridge and the lower part of the nose restrict the field to 50 degrees; the root of the nose allows 55 degrees; the lower orbital margin, 65 degrees; and the temporal orbital margin, up to 100 degrees.

Kestenbaum allowed for a quantitative measurement, but a simple fast, and nearly exact result is obtained by moving a finger or pencil into the

Fig. 3. Sketch showing the Kestenbaum[2] outline perimetry test. The tip of a stick is moved into the field of vision from different directions and over various facial prominences. Kestenbaum found that visual fields generally conform to these facial boundaries.

visual field from the periphery (while the patient is looking straight ahead) keeping the object only 2 or 3 cm from the face (*Fig. 3*). This is repeated in a dozen meridians and the patient is instructed to say "Yes" or "I can see" the instant he sees (not recognizes) the object. The examiner can determine easily the first moment in which the object, the "outline" (e.g., ridge of nose), and a point of the cornea are aligned. When the patient sees the finger too late (i.e., when the object has already passed the outline of the face), a defect of his visual field is proved. As Kestenbaum[2] has emphasized, although the patient may react not at all, or too slowly the first time, repetition of the test usually gives the correct result.

This is a sound method for routine testing of visual fields, and as might be imagined has proved to be much faster than the usual confrontation study. It can be recorded in the same diagrammatic fashion and the results are more consistently reproducible.

Conclusion

Formal perimetric and tangent screen examination of the visual fields of most patients is often not immediately available. The most practical substitutes are the finger-waggle test and the Kestenbaum outline perimetry test. Both are described and their simplicity and value are emphasized in the hope that they will be incorporated into the routine eye and nervous system examinations of patients.

References

1. Gardner, W. J.: Personal communication, January 6, 1970.

2. Kestenbaum, A.: Clinical Methods of Neuro-ophthalmologic Examination. New York: Grune & Stratton, 1946, 384 p.; p. 34–37.