

Assessment of the Functional Adaptation of Individuals to Homonymous Visual Field Loss

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While vision specialists are able to quantify the degree and character of visual field defects using traditional perimetric techniques, the character of the loss itself, as represented in the visual field chart, is not necessarily descriptive of the individual's ability to function with the deficit. There is a need to be able to quantify and qualify an individual's changes in visual function as a result of the visual field loss. Clinical tests that are effective, repeatable, convenient, and inexpensive would provide information which would not only aid in monitoring the recovery of the patient, but might also serve to help direct the vision rehabilitation program.

We have developed several clinical techniques that have been found useful to monitor an individual's adaptation to homonymous visual field defects. These tests use a special "Hemianopsia Chart" specifically developed for this application. The Hemianopsia Chart is a 25 inch square chart with 81 20/115 size Sloan Acuity letters arranged in 9 rows of 9 letters each to form a square. The chart is intended to be used at a distance of 1 meter. Three subtests have been developed that offer information regarding different aspects of visual functioning with a homonymous visual field defect.

1. Orientation: Identifying straight ahead.

Individuals with a hemianopsia may present with an altered perception of their "visual space" which may be repositioned to either the right, left, up or down, or some combination. The degree and orientation of an individual's perception of "straight ahead" can be readily quantified with the hemianopsia chart.

- a. Position the chart so that it is centered in front of the patient so that if you were to extend a line directly forward from their nose it would hit the letter "D" in the center of the chart.
- b. Ask the patient to look at the chart and to report which letter appears to be in the very center of the chart. You can allow them to point to or touch the letter if necessary.
- c. If the patient identifies the center letter then record the response as centered- "C". If the patient selects a letter two to the right- record the response as 2R. If the patient responds three letters to the left and two letters down- record as 3L2D.
- d. At a distance of 1 meter, the center of each letter is 3.65 degrees away from the next. Letters on a diagonal are 5.15 degrees separated. With these references you can transform the actual "mis-orientation" into a degree notation if desired.

2. Blind Field Tracking- Tracking into the hemianopic field.

Individuals with homonymous visual field defects may have difficulty crossing the midline to track into and continue along within the hemianopic field. Patients must learn to track their eyes into the hemianopic field smoothly to support many visual tasks. Their ability to do so can be quantified with the hemianopsia chart.

a. With the hemianopsia chart placed at 1 meter, ask the patient to read the letters across the top line of the chart going from the normal field side "good side" into the visual field defect "bad side." You should expect that they will read the first several letters fluently, and then as they reach and read into the visual field loss, they may slow down markedly. Record the number of letters that the patient reads fluently as a value of their tracking ability into the visual field defect. By repeating the task several times on subsequent lines you can determine whether the patient is capable of self adapting by increasing fluent tracking into the bad field, or whether the hemianopsia is encroaching upon the intact visual field. These subsequent line retests have been helpful to develop a prognosis regarding adaptation to the field defect..

b. If the patient has a left hemianopsia, they should start reading with the top right letter. If they are able to read four letters before they slow down- record as 4L. If they have a right hemianopsia they should start reading from the left. If they can read all nine letters fluently- record 9R. Record subsequent trials as ie: 4L, 4L, 5L etc.

3. Blind Field Saccadics- Scanning into the hemianopic field.

Individuals with hemianopic field defects often have difficulty quickly finding objects in their absent visual field. This may impact mobility as well as tracking from line to line while reading.

a. Place the hemianopsia chart at 1 meter from the patient and centered in front of the patient as in previous tests. Show the patient the location of the first and last letter on the top line, starting with the top left letter, irrespective of the side of the defect. They can even be allowed to touch each letter for reinforcement.

b. Ask the patient to read the first and last letter on each line as fast as possible until they reach the bottom of the chart. Count the number of letters, if any, that they miss as a measure of their loss of awareness to the affected visual field.

c. If the patient has a left hemianopsia, it would be expected that they might miss letters on the left side of the chart. If, after all 9 lines of the chart have been read, they have missed 12 letters on the left side- record 12L. If they have a right hemianopsia, the patient might miss letters on the right side of the chart. If, for instance, they miss 5 letters- record 5R.

Interpretation:

These three easy to perform tests will allow the examiner to characterize a hemianopic patient's perception of straight ahead; their ability to scan into the affected field; and their ability to promptly and accurately scan and localize into the affected field.

These simple tests can contribute to developing a treatment plan to support weaknesses that are displayed; can help evaluate optical treatments for their ability to normalize test responses; to aid in developing a prognosis for adaptation; and can provide a method to quantify changes in the patient's adaptation to their visual field loss as a function of therapy, adaptation, and recovery.

Note: The Hemianopsia Chart is available through:
Precision Vision
721 North Addison Rd.
Villa Park, IL 60181
(708) 833-1454

