

ONE CASE OF THE DIAGNOSTIC VALUE OF OPTOMETRIC COLOR FIELDS

By Dr. Clinton Miller

C. R., a white male, age 60, well nourished and from all appearances in good physical condition, entered our Optometric Eye Clinic on December 22, 1951, complaining of severe headaches at the apex of the head. Patient was recently given a complete physical examination, including roentgenographic examination of the upper gastric intestinal tract by means of a barium meal and the findings were negative except from spasm or reflex action of the stomach. The electro cardiograph showed normal findings and past prostatic work ruled out involvement there. Lower bowel results were negative also. At this time the eye grounds showed no deviation from normal. There was some liver dysfunction and the cholesterol was passing the upper normal line. At this time, he was on a biliary tract diet.

We had previously refracted this patient on July 27, 1950, and the following lenses prescribed and worn at present. Right eye + 1.00 + .25 x 180; left eye + 1.00 + .25 x 180 with a + 2.00 add both eyes. The fundus appeared to be normal which at this time and in view of the history seemed not too surprising. The refractive status of the eyes remained nearly the same but with the very severe nature of the apex headaches visual fields were taken.

The visual field of the right eye showed no enlargement of the blind spot and no central or field scotoma. However, as can be seen from the picture, the color fields are greatly contracted in red and blue with almost complete overlapping of red and green. There is much interlacing of all colors and many varied size peaks are formed. The almost normal green field rules out the possibility of toxicity while the extreme contraction for red and the peaks formed in blue and red indicated severe cerebral involvement. At this time, it was not realized but later surmised that the patient was in a seepage or slightly hemorrhage state at the time visual fields were taken. If further fields had been taken, we would have expected to find more and more contraction until finally only a small central area would be discerned for the colors. In the left eye the fields as can be seen follow an identical pattern of contraction of red and blue and overlapping and interlacing. Here too the blind spot is normal with no scotoma existing. After these findings were received and interpreted the physician in the case was informed immediately by telephone and informed of the serious nature of the case.

On January 2, 1952, an oculist refracted the patient and reported refractive error the same as patient was wearing. Ocular imbalances were checked at this time and found to be normal. Suspicion of psychological anxiety headaches were reported.

January 4, 1952 the patient became seriously ill and was referred to Toledo, Ohio, for further investigation and neurological examination. He was hospitalized and almost immediately became comatose. January 6, 1952, the patient was surgically treated for the removal of a sub-Dural hematoma. After a rapid recovery, for a case of this kind, the patient reported again to our clinic for orthoptic training.

During the period of recuperation, he experienced diplopia and loss of visual acuity in the right eye. This was not unusual in cerebral surgery and after several orthoptic periods binocular vision was restored. March 10, 1952 Keystone D. B. Skills Tests were as follows:

- Simultaneous vision – present
- Vertical imbalance – 1-2 left hyperphoria.
- Lateral imbalance – 6 ½ moving to 7 ½.
- Fusion – four then three

Right eye -useable vision – 70%, occlusion 98%
Left eye – usable vision – 102%, occlusion 103%.
Stereopsis- missed last two and much time was required to elicit response.
Lateral imbalance near – 5 to 3 ½ settled at 4.
Fusion near – two (right eye) to three, reversing. Suppression of left eye.

During this time, the patient complained that left eye vision was worse.

On April, 17, 1952 skills were repeated the last time and the significant changes were almost orthophoria vertically; right and left eye usable vision 105%; stereopsis all correct with proper time element; Lateral imbalance and fusion at near settled to normal with suppression of left eye removed; usable vision at near 102% right, left and both.

It is our belief in a case of this kind that orthoptically one is aided by the constant increase in the patient's physical well-being, and psychological state of being relieved from such constant pain.

To regress to the color fields again, the literature reveals little as to location, size of tumor and presence of choked disk. For example, to quote from Duke-Elder, speaking of brain tumors: "the time of appearance and the degree of papilledema are therefore not to be relied upon as diagnostic criteria." There is perhaps little to be gained from this case because of the great complexity of each individual cerebral tumor. However, we can draw certain salient points from any case studied as in this case: 1. No noticeable papilledema. 2. No central scotoma. 3. Color fields greatly deviated, especially constricted.

Duane states that papilledema is found in 90% of all cerebral tumors while other authorities believe in only 70-80%. The exact size of the tumor has little bearing on the degree of papilledema. For example, in the case described no swelling of the optic disk was seen and his tumor was the size of a tomato. Most often tumors in the posterior fossa cause papilledema because of pressure exerted upon the aqueduct of Sylvius and the vena cerebra magna producing stasis of cerebrospinal fluid in anterior ventricle of the brain. Duane again cities frontal tumors as typical of descending neuritis dividing the stages into three parts: first, which is lacking or more possibly goes unnoticed is bilateral papilledema with good acuity. Secondly, there is a remaining ipsilateral papilledema with a central scotoma and optic atrophy in contralateral eye.

The case I cited to you was not picture book as can be seen. Neither can I say that they are wrong for after observation of many many cases these observations are based on averages.

Presented at Excelsior Springs, 1952, by
Dr. Clinton Miller, Delphos, Ohio