Monocular temporal hemianopia in a young patient

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A 12-year-old girl presented with a history of sudden visual hemi-field loss in the left eye. The visual field defect was a clear-cut temporal hemianopia in the left eye; eye was normal. Complete eye examination and neuro-imaging of brain and opto-chiasmal region revealed normal structural findings. The visual field defect was suspected to be non-organic. This assumption was proven to be the diagnosis when simultaneous binocular fields showed the same pattern, although the contralateral eye's nasal hemi-field was intact. This symptom was alleviated by reassurance and placebo treatment.

Key words: functional visual loss, monocular temporal hemianopia, non-organic visual field defects, opto-chiasmal junction.

A clear-cut monocular temporal hemianopia requires an intracranial lesion localized in a very specific para-chiasmal area to affect only the crossing nasal retinal fibers from the ipsilateral eye. A case presenting with such a visual field defect is reported to discuss the etiologic possibilities and to demonstrate the usefulness of simultaneous binocular static perimetry in the differential diagnosis.

Case Report

A 12-year-old girl realized, after staring at the sun for a while, that she could not see in the left hemi-field of her left eye. She was taken to a nearby university hospital where the interpretation of the findings was left homonymous hemianopia. Magnetic resonance imaging of the brain was obtained which was reported as normal.

She was referred two days later when her visual field defect (VFD) remained the same in repeated testing, for an opinion regarding her visual fields.

Her visual acuities were 20/20 in both eyes and color vision was normal. She had equal pupils that were normally reactive to light and near stimuli. The optic nerves and retinal periphery appeared normal on dilated fundus examination. She was complaining about a frontal headache and left-sided eye pain. There were no other neurological symptoms. Her past medical history was insignificant. The results of her visual field testing with static perimetry are shown in Figures 1a and 1b.

A pediatric neurologist was consulted, who ruled out hemi-spatial visual inattention and decided her complete neurological exam was normal. An EEG was scheduled in order to eliminate any central nervous system pathology without a corresponding structural lesion on neuro-imaging. Although her brain magnetic resonance imaging (MRI) was normal, it was repeated with special attention to the chiasm and left opto-chiasmal junction. The next day the patient returned with the new, (again normal) MRI. At this time, we strongly suspected a functional VFD and requested she do another testing, this time with both eyes open. The result of her binocular visual field test, which is shown in Figure 2, left us confident that we were dealing with a functional monocular temporal hemianopia.

Further consultation with her parents revealed that she was a bright student, and that she had received much attention from her teacher at the time her symptom appeared. Her parents were informed about the possible situation. It was explained to the patient that if there was no alleviation of the symptom with medicine, we would "unfortunately" have to request an EEG. We prescribed vitamin supplements and non-steroidal anti-inflammatory eye drops to be administered "hourly".

She came in the next day stating that she was much better and ready to have a new visual field test. Her left visual field is shown in Figure 3. The "blind" field was sliding towards the temporal periphery. She and her parents were shown the

progression to normal in her visual field, and were sent home with reassurance and with an appointment two weeks later, at which time she demonstrated excellent visual field on testing.

Discussion

A patient with a monocular temporal hemianopia is likely to have a lesion in the ipsilateral optic nerve, close enough to the chiasm to selectively impair conduction in crossing nasal retinal fibers from the ipsilateral eye, but too anterior to affect crossing nasal retinal fibers from the contralateral eye. The combination of a relative afferent papillary defect (RAPD), with or without optic disc pallor on the side of the monocular temporal field loss implicates compression of the optic nerve at its junction with the chiasm[1]. Hershenfeld et al.[2]

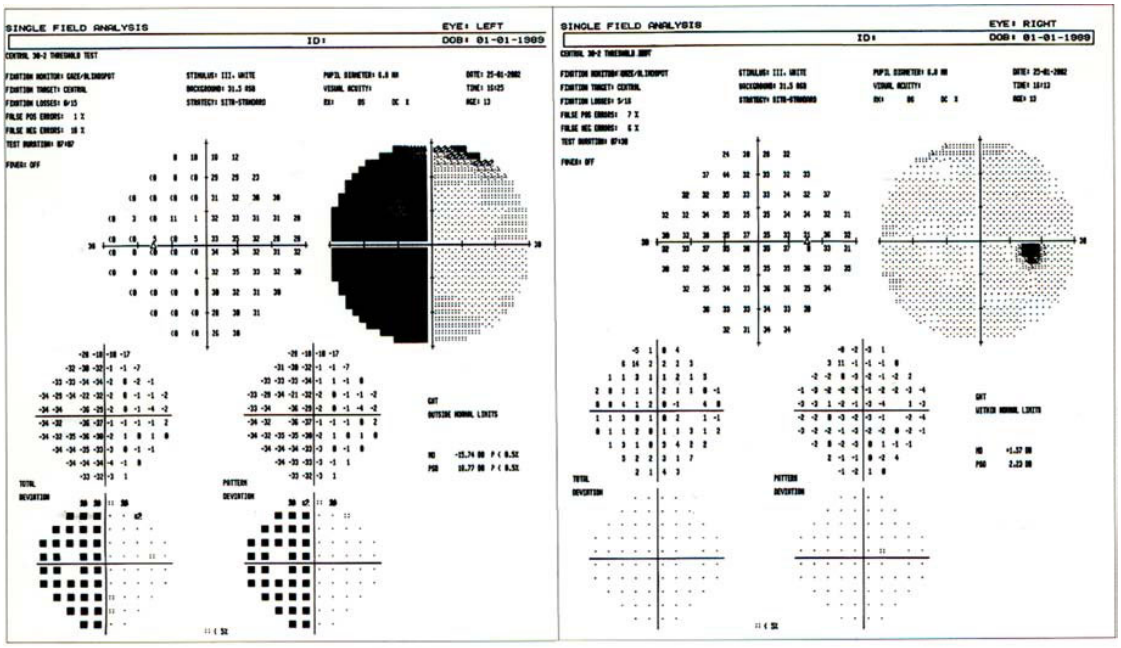

Fig. 1. Initial left (a) and right (b) visual fields of the patient.

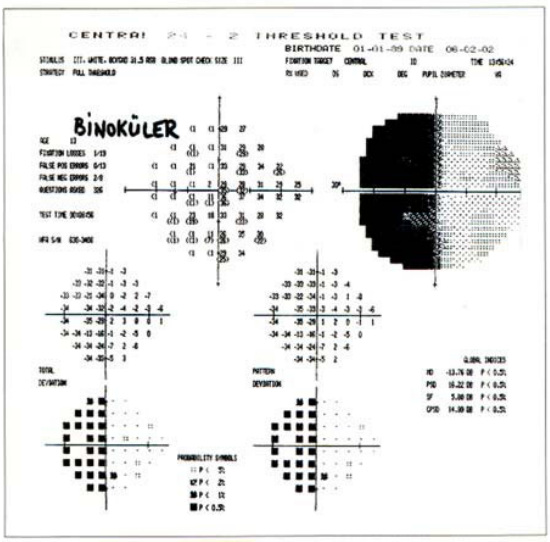

Fig. 2. Binocular simultaneous visual field of the patient.

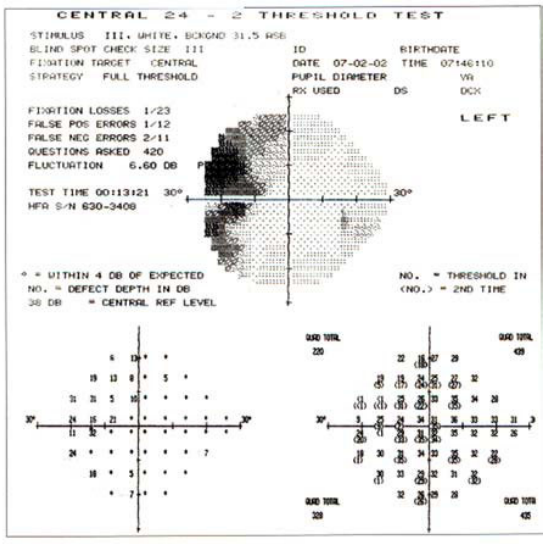

Fig. 3. Left visual field of the patient, performed one day after the diagnosis.

reported 24 cases of monocular temporal hemianopia, 19 of which were caused by juxta-sellar lesions, primarily pituitary adenomas. Most of the cases had RAPDs. Only two cases were regarded as functional VFDs.

Absence of an RAPD and normal neuro-imaging of the para-sellar region implied that there was no structural evidence for our patient's symptom. Therefore, in order to definitely diagnose the functional nature of the finding, we performed binocular simultaneous visual field testing. This method is specifically recommended for such monocular VFDs[3,4]. A "real" temporal hemi-field defect is expected to be smaller and more peripheral when viewed binocularly, with the help of the contralateral eye's normal nasal hemi-field.

Gittinger et al.[5] reported four adults whose initial symptoms were complete monocular temporal hemianopia, headache and eye pain. The functional nature of the VFDs was verified with binocular simultaneous testing. Assi et al.[6] reported two such cases and demonstrated spontaneous improvement towards normal.

Non-organic ocular disorders in children are mostly encountered in girls around age 10. The condition is usually bilateral and the commonest complaints are blurred vision, distorted or small images, and, only occasionally, VFDs. Tunnel vision is the most frequent VFD. Hemianopias, especially monocular hemianopia, are rare[7].

It should also be mentioned that automated static perimetry, as currently practiced, cannot differentiate functional from organic visual field loss[8]. The patients can produce reproducible non-organic VFDs and do not show fixation losses or increased number of false positive/negative errors[3], as was the case in our 12-year-old patient.

In a study of functional visual complaints, psychosocial problems relating to parental divorce, poor school performance and attention-getting behavior were common in the young patients[9]. Catalano et al.[10] stated that associated signs and symptoms such as headaches, diplopia, micropsia etc. were common in these children. Their experience also suggested that regardless of severity, reassurance and follow-up were the most effective therapy and psychiatric referral was only rarely necessary.

It is useful to demonstrate the non-organic nature of the situation to the parent and reassure them about the excellent prognosis. The child should also be informed that s(he) has a problem, which s(he) is absolutely capable of overcoming. The patient should only be referred to the psychiatrist if a minimal follow-up period does not eliminate the symptoms[7,10]. We spoke to the patient and her parents separately using appropriate terms and requested the parents not to confront the child, but rather support and encourage her. We also added a short-term placebo treatment to our reassurance, which was effective in 24 hours. The patient's symptom showed marked resolution overnight, and complete resolution followed in less than two weeks. The interesting example emphasizes the capability of a child to produce such a specific functional VFD and demonstrates what proper management should have been. Monocular temporal hemianopia without RAPD and with normal neuroimaging should have prompted us, at the first visit, to perform a binocular simultaneous test before going into consultations and more specific investigations.

REFERECES

1. Cox TA, Beck RW, George CW, Kupersmith MJ, Sedwick LA, Slamowitz TL. The sensory visual system. In: Hedges TR, Friedman D, Horton J, Newman SA, Striph GG, Kay MC (eds). Fundamentals and Principles of Ophthalmology Section 5. San Fransisco: American Academy of Ophtalmology; 1999-2000: 54-58.
2. Hershenfeld SA, Sharpe JA. Monocular temporal hemianopia. Br J Ophthalmol 1993; 77: 424-427.
3. Miller NR, James RK. Neuro-ophthalmologic manifestations of nonorganic disease. In: Miller NR, Newman NJ (eds). Walsh&Hoyt's Clinical Neuro-Ophthalmology (5th ed). Vol 5. Baltimore: Williams & Wilkins; 1998: 1765-1786.
4. Martin TJ. Threshold perimetry of each eye with both eyes open in patients with monocular functional (nonorganic) and organic vision loss. Am J Ophthalmol 1998; 125: 857-864.
5. Gittinger JW Jr. Functional monocular temporal hemianopsia. Am J Ophthalmol 1986; 101: 226-231.
6. Assi A, Brazier DJ. Functional hemianopias on Humphrey visual field analysis. Acta Ophthalmol Scand 1998; 76: 620-622.
7. Taylor D. Non-organic ocular disorders. In: Taylor D (ed). Pediatric Ophthalmology, Section 5. Oxford: Blackwell Scientific Publications; 1990: 517-524.
8. Smith TJ, Baker RS. Perimetric findings in functional disorders using automated techniques. Ophthalmology 1987; 94: 1562-1566.
9. Keltner JL, May WN, Johnson CA, Post RB. The California syndrome. Functional visual complaints with potential economic impact. Ophthalmology 1985 Mar; 92: 427-435.
10. Catalano RA, Simon JW, Krohel GB, Rosenberg PN. Functional visual loss in children. Ophthalmology 1986; 93: 385-390.