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Teaching NeuroImages:

Mind the gap! Post-fixational blindness due to traumatic rupture of the optic chiasm

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Author contributions:

Konrad P. Weber designed the examination setup and wrote the manuscript.
Klara Landau examined the patient, made the diagnosis, performed the perimetry and contributed to the manuscript.

Disclosure:

The authors declare no conflict of interest.

A 59-year-old woman visited the ophthalmologist for a routine examination. Ever since a severe head injury with frontal lobe damage at the age of 16, she experienced intermittent diplopia and difficulties finding misplaced objects, but worked as a clerk throughout her life. Ocular motility was full with only slight exotropia, but perimetry revealed complete bitemporal hemianopia (figure 1AC). Bitemporal hemianopia is caused by disruption of crossing nerve fibers in the optic chiasm (figure 2), usually due to suprasellar masses, or rarely, following head trauma¹. Without corresponding retinal areas, patients are no longer able to align the two hemifields, lose stereopsis, and usually develop strabismus. Convergence on a near target induces post-fixational blindness with a gap between the two nasal hemifields (figure 1BD), in which more distant objects disappear.² This unusual visual field defect explains the patient's complaint.

References

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2. Nachtigaller H, Hoyt WF. [Visual perception disorders in bi-temporal hemianopsia and displacement of the visual axes]. *Klin Monbl Augenheilkd* 1970;156:821-836.

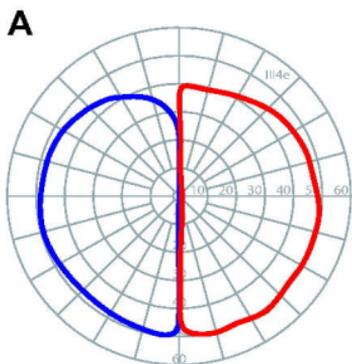
Figure 1: Post-fixational blindness due to traumatic rupture of the optic chiasm.

(A, C) Standard perimetry shows complete bitemporal hemianopia. The monocular visual fields of the right eye (blue) and the left eye (red) are superimposed. (B, D) Perimetry during convergence on a near target demonstrates post-fixational blindness with a gap between the two nasal hemifields (black wedge).

Figure 2: Traumatic rupture of the optic chiasm demonstrated by T2-weighted MRI

Axial (A) and coronal view (B) of the suprasellar cistern: The optic chiasm is split into two parts (arrowheads) with no crossing fibers left.

Standard Perimetry



Near Target Perimetry

