*The Canadian Journal of Neurological Sciences* (2026), **53**, 310–311
doi:10.1017/cjn.2025.10132

Canadian Journal of Neurological Sciences
Journal Canadien des Sciences Neurologiques

## Neuroimaging Highlight

# Checkerboard Visual Field Deficit in Bilateral Occipital Strokes

Chijindu A. Ukagwu[1], Anish Kapadia[2] and Rahul A. Sharma[3]

[1]Temerty Faculty of Medicine, University of Toronto, Toronto, Canada, [2]Department of Medical Imaging, University of Toronto, Toronto, Canada and [3]Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Canada

**Keywords:** Neuro-ophthalmology; stroke; vision loss; homonymous hemianopia; magnetic resonance imaging

(Received 4 January 2025; final revisions submitted 19 May 2025; date of acceptance 23 May 2025; First Published online 30 May 2025)

A 60-year-old man with a known history of abdominal aortic aneurysm (AAA) with associated thrombus, who had been lost to follow-up, presented with visual loss 2 months after experiencing a stroke. His stroke occurred in the setting of a ruptured AAA, which led to cardiac arrest with pulseless electrical activity lasting 12 minutes before return of spontaneous circulation after cardiopulmonary resuscitation.

The patient reported blurred vision in both eyes. Humphrey visual fields (24–2) demonstrated the rarely reported crossed-quadrant homonymous hemianopia, also known as "checkerboard visual field loss" (CVFL) (Figure 1A, 1B). The neurological exam was otherwise unremarkable except for intermittent non-pulsatile tinnitus. Stroke workup included brain MRI, which revealed infarcts in the right inferior temporal-occipital (Figure 1C) and left occipital lobes (Figure 1D). A standard diagnostic evaluation was undertaken to investigate potential etiologies of his stroke, including cardiac and vascular sources of embolism, as well as rhythm monitoring for occult arrhythmia. Despite the comprehensive workup, no definitive cause of stroke was identified, and the etiology was presumed to be multifactorial, involving hypoperfusion related to prolonged cardiac arrest and/or a possible embolic component related to the ruptured AAA.

In this patient, a right inferior temporal-occipital infarction produced a left superior quadrantanopia, while a left occipital infarction caused a right inferior homonymous hemianopia. Despite multiple end-organ damages, there were no other strokes. As the posterior cerebral artery (PCA) territory does not inherently demonstrate an increased predilection for embolic insults originating from a central source, the exclusive occurrence of strokes within the PCA territory in this patient remains unexplained.

First described in 1990, CVFL is a rare pattern of visual loss that has been seldom reported in the literature and is most often seen in the context of bilateral infarction of the calcarine arteries.[1,2] CVFL can alternatively represent bilateral simultaneous or sequential post-chiasmal lesions of other causes, including demyelination, inflammation or trauma.[2] The etiology of documented causes includes cerebrovascular accidents, multiple sclerosis, syphilis and necrotizing ependymomyelitis.[2,3,4,5] While the visual field loss was not detected in this case prior to formal perimetry, CVFL can be clinically elicited via careful confrontation visual field testing.

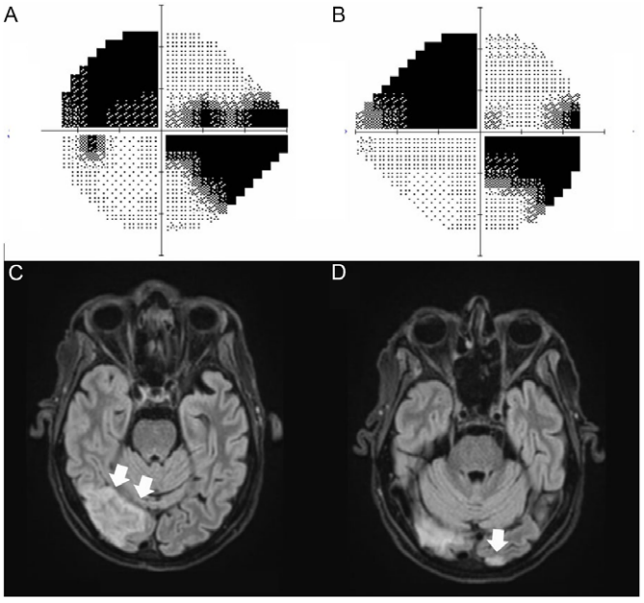



**Figure 1.** Humphrey's visual field 2 months after stroke reveals a crossed-quadrant homonymous hemianopsia (A,B). T2-weighted Fluid-Attenuated Inversion Recovery sequence reveals stroke in the right inferior temporal-occipital (C) and left occipital regions (D).

The sensitivity of confrontation visual field assessment improves when a colored stimulus, that is, red cotton ball or red cap, is used.

**Author contributions.** All authors have accepted responsibility for the entire content of this manuscript and approved its submission. C.U.: Corresponding author. Literature review. MRI interpretation. Visual field interpretation. Manuscript writing. A.K.: Radiology expert review for MRI interpretation. Manuscript writing. R.S.: Case identification and recruitment. Clinical data collection. Ophthalmology expert review for visual field interpretation. MRI interpretation. Manuscript writing.

**Funding statement.** The authors did not receive any financial support for this research and work.

**Competing interests.** The authors state no conflict of interest.

**Corresponding author:** Chijindu Ukagwu; Email: Chijindu.ukagwu@mail.utoronto.ca

**Cite this article:** Ukagwu CA, Kapadia A, and Sharma RA. (2026) Checkerboard Visual Field Deficit in Bilateral Occipital Strokes. *The Canadian Journal of Neurological Sciences* **53**: 310–311, https://doi.org/10.1017/cjn.2025.10132

© The Author(s), 2025. Published by Cambridge University Press on behalf of Canadian Neurological Sciences Federation.

https://doi.org/10.1017/cjn.2025.10132 Published online by Cambridge University Press

## References


1. Dyer JA, Hirst LW, Vandeleur K, Carey T, Mann PR. Crossed-quadrant homonymous hemianopsia. *J Clin Neuro Ophthalmol*. 1990;10: 219–222.
2. Kamal S, Al Othman B, Kini AT, Lee AG. Checkerboard visual field defect in occipital stroke. *J Neuro-Ophthalmol*. 2020;40(2):e13–e14. doi: 10.1097/WNO.0000000000000892.
3. Cesareo M, Pozzilli C, Ristori G, Roscioni AM, Missiroli A. Crossed quadrant homonymous hemianopsia in a case of multiple sclerosis. *Clin Neurol Neurosurg*. 1995;97:324–327.
4. Cross SA, Smith JL. Crossed-quadrant homonymous hemianopsia. The "checkerboard" field defect. *J Clin Neurol Ophthalmol*. 1982;2:149–158.
5. Tamhankar MA, Markowitz CE, Galetta SL. Checkerboard fields in multiple sclerosis. *J Neurol Neurosurg Psychiatry*. 2005;76:268–268.


https://doi.org/10.1017/cjn.2025.10132 Published online by Cambridge University Press