

Clinical-Medical Image

Neuro-ophthalmology in Pictures from Visual Fields to Imaging

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Short Communication

Neuro-ophthalmology bridges the disciplines of neurology and ophthalmology, focusing on the intricate connections between the visual system and the brain. The visual pathways—from the retina through the optic nerves, chiasm, tracts and visual cortex can be affected by a wide range of neurological disorders. In this context, images play a vital role in diagnosis, interpretation and understanding of disease mechanisms. A pictorial approach to neuro-ophthalmology not only enhances clinical learning but also helps correlate anatomical structures with functional deficits observed in visual field testing and neuroimaging. Through visual documentation, complex neuro-ophthalmic conditions become more comprehensible, aiding in accurate diagnosis and effective management.

Visual field testing remains a cornerstone of neuro-ophthalmic evaluation, providing essential insights into the functional integrity of visual pathways. Patterns of visual field loss often point directly to the location of lesions within the visual system. For example, bitemporal hemianopia suggests compression at the optic chiasm, commonly due to pituitary adenoma, whereas homonymous hemianopia indicates post-chiasmal involvement in the optic tract or occipital cortex [1].

Neuroimaging has transformed the diagnostic landscape of neuro-ophthalmology by revealing structural and functional details that were once impossible to visualize. MRI provides high-resolution images of the optic nerves, chiasm and visual cortex, enabling identification of demyelinating lesions, compressive masses, or ischemic damage. In conditions like optic neuritis, multiple sclerosis, or intracranial tumors, MRI not only confirms the diagnosis but also guides therapeutic planning and prognosis. Functional imaging techniques, such as fMRI and diffusion tensor imaging, further elucidate neural connectivity and visual pathway integrity. When combined with fundus photography, Optical Coherence Tomography (OCT) and angiography, these modalities create a comprehensive visual atlas that connects ocular findings with central nervous system pathology.

A pictorial compilation of neuro-ophthalmic disorders from visual field charts to imaging studies serves as an invaluable clinical and educational resource. It helps practitioners recognize characteristic patterns of visual dysfunction, understand the underlying neural anatomy and appreciate the systemic implications of ocular signs. By integrating functional and structural images, such an atlas promotes a holistic view of vision science, uniting ophthalmic and neurological perspectives. Ultimately, neuro-ophthalmology in pictures illuminates the intricate dialogue between the eye and the brain, transforming complex clinical observations into clear, visual understanding [2].

Keywords: Neuro-ophthalmology; Visual Fields; Neuroimaging

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Conflict of Interest

None.

References

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