

What Went Wrong? Pearls and Pitfalls in the Diagnosis and Management of Neuro-Ophthalmologic Cases

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Neuro-ophthalmology is the “overlap” specialty between ophthalmology and neurology. It covers all the disorders which may affect those parts of the central nervous system devoted to vision. Indeed, vision owns extensive “real estate”: the afferent visual system (the pathways for visual input and processing) encompasses more than one-third of the supratentorial brain mass, and the efferent system (the pathways for ocular motor control and pupillary function) criss-crosses throughout the brainstem and cerebellum. It is hard to imagine a neurological disorder that could not have neuro-ophthalmic manifestations. Hence, neuro-ophthalmology has also been referred to as “applied neuro-anatomy”.

As shown by this series of cases, neuro-ophthalmology is deeply rooted in a certain way of thinking. It begins first and foremost with neuro-anatomy, moves next to the mechanisms of disease, then generates a differential diagnosis of which specific disorders to consider, and finally addresses the appropriate management for diagnosis and treatment:

1) Where? 2) How? 3) What? 4) Now What?

For example, in a patient presenting with visual loss, the first step is to localize the lesion along the pathways of vision. Let's say that the localization is the optic nerve, the second step is to review all those categories of disease that can affect the optic nerve (for example, inflammatory, vascular, compressive, toxic, etc.) and decide which best fit the clinical profile of the case. Once the likely mechanisms have been identified, then specific disorders can be considered. Ultimately, the appropriate diagnostic tests and further management will depend on the preceding process of logical thinking.

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Table: Comparison of 4 classic optic neuropathies:

	Op Neuritis	NAION	Compressive	Leber HON
Age	Younger	Older	Any	Younger
Gender	F > M	M = F	M = F	M > F
Fam Hx	No or MS	No	No	Yes
Bilateral?	<10% at 1yr	<10% at 1yr	No	100% at 1yr
Onset	Rapid	Rapid	Slow	Subacute
Pain?	++ (w EOM)	Rare	No	No
Color	Poor	Often spared	Poor	Poor
Visual Field	Central	Altitudinal	Central/temp	Cecocentral
Optic Nerve	N /edema	Edema	NI/edema	NI/pseudo
MRI	Abnl ON	Normal	Tumor	Normal
Prognosis	Good	Poor	Poor (if no Rx)	Poor
Systemic	MS	HTN/DM	None	None