



Neuro-ophthalmology: through a wide angle lens

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“Neuro-ophthalmology” To the casual observer, the name suggests a field limited to the study of the nerves that see and move the eyes. In actuality, neuro-ophthalmology is a complex subspecialty that merges clinical expertise, fundamental science and applied technology from a variety of related disciplines, including neurology, neurophysiology, developmental anatomy, ophthalmology, visual science, radiology, internal medicine and molecular biology, with the goal to better understand how disorders of the brain and systemic abnormalities affect the visual system.

The Past: The origins of neuro-ophthalmology are deeply rooted in clinical medicine. In the early 20th century, physicians were increasingly aware that brain and systemic abnormalities could cause a variety of visual symptoms and signs. Our forefathers, in the era before modern radiology, combined a particular knack for observation, deftness of examination and knowledge in the more subtle aspects of neuroanatomy to shape a discipline that focused on precision of anatomic localization of a clinical deficit and erudition of the differential diagnosis. The importance of visual anatomy and physiology was emphasized in a 1945 textbook simply entitled “Neuro-ophthalmology” by Donald Lyle (Lyle, 1945). The first comprehensive clinical textbook dedicated to this discipline appeared in 1947, authored

by Dr. Frank B. Walsh (Walsh, 1947), considered by many as the founder of clinical neuro-ophthalmology. The excitement and enthusiasm created by this compendium of clinical vignettes spawned a new generation of clinicians who actively sought specialized training in this newly emerging subspecialty called neuro-ophthalmology. In the span of just 50-plus years, neuro-ophthalmology has enjoyed a growth of exponential proportions, both in the depth and breadth of subjects and themes under its aegis.

The Future: Neuro-ophthalmology is not just about clinical diagnosis and disease. It aims to a greater fundamental understanding of visual perception, neuronal signaling and cortical processing as well as the neural basis, control and mechanics of the head and eyes. It develops experimental models of injury and repair and applies those principles to clinical disease. It incorporates new imaging techniques which allow higher definition of the retina, the optic nerve and the central visual pathways and examines novel methods for restoring vision such as prosthetic devices, implants, neuronal regeneration and gene therapy. And yet neuro-ophthalmology will never lose sense of its roots, striving for excellence in education and patient care while promoting clinical research and trials that address issues and controversies relevant to the its practice.

This new century will see neuro-ophthalmology expanded and redefined to include these and other aspects of its ever-diversifying frontiers. At first glance, this broadened scope of neuro-ophthalmology may seem a daunting and perhaps even intimidating prospect to anyone wishing to enter the subspecialty of neuro-ophthalmology. It should not. The multifaceted aspect of neuro-ophthalmology is its greatest appeal: anyone and everyone can make an important contribution to this exciting subspecialty.

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