

Preface

“History teaches that the commencement of every branch of science is nothing more than a series of observations and experiments which had no obvious connections with one another”

Justus von Liebig (1846)

Ocular vascular occlusive disorders – that is, optic nerve ischemic disorders, retinal ischemic disorders and retinal venous occlusive disorders – collectively constitute the most common cause of acute visual loss. Nevertheless, information on these disorders has until recently been based primarily on clinical impressions, folklore, dogma, and “conventional wisdom” taught by one generation of ophthalmologists to the next, rather than based on systematic studies laying out basic scientific facts and pathogeneses. I have investigated all these disorders systematically since 1955 by doing basic, experimental and clinical studies. Based on the findings of my scientific studies, I have often challenged and contradicted dogmas and the “conventional wisdom” on these diseases.[1] As Thomas Henry Huxley wrote: “The great tragedy of Science – the slaying of a beautiful hypothesis by an ugly fact.”[2] But the facts are what we need, even if they are sometimes ugly and unwelcome. When dogmas and “conventional wisdom” are challenged, even when new scientific information shows that they are no longer valid, the initial reaction is almost always skepticism or even ridicule. I have experienced that so often. The objective of this book is to clarify the understanding of ischemic optic neuropathies, in the light of the best current scientific knowledge, and to put their management on a rational basis.

During my studies of ischemic optic neuropathies and other ocular vascular occlusive disorders, I have found that one major reason for confusion and controversy about these diseases has been lack of understanding of the basic scientific facts. The other major reason has been the unthinking application of findings from superficially similar disorders in other organs to these disorders in the eye and optic nerve, even though the two differ fundamentally in aspects such as morphology, physiology, pathology and pathogenesis; a classical and highly prevalent example of that is the assumption that findings about the pathogenesis and management of stroke can be applied to ischemic optic neuropathy.[3] As will be evident from the information in the book, that is not true at all, and that has resulted in a confusion and controversy about the pathogenesis and management of non-arteritic anterior ischemic optic neuropathy. It seems that, in the past, the lack of any hopeful treatment for these blinding disorders discouraged researchers from investing their valuable time in investigating them. Fortunately, knowledge is constantly evolving and advancing. An in-depth understanding of the morphology, blood supply and circulation of the optic nerve, the factors that influence its blood flow, and the pathogenesis of various types of ischemic optic neuropathy is crucial if we are to manage these diseases rationally; after all, the basic sciences are the foundation of Medicine. In this book, I have tried to lay out in detail the basic

scientific facts about various aspects of optic nerve ischemic disorders. Therefore, the first section of the book covers the relevant basic scientific information related to ischemic optic neuropathies; the second section deals with the etiology, pathogenesis, clinical features and management of the different types of ischemic optic neuropathy.

Some may comment that there is repetition of information among various chapters. There are many common factors and issues between the various aspects of various ischemic optic neuropathies, so that a certain amount of repetition among the various chapters is unavoidable, for proper discussion and understanding; however, in the interests of avoiding repetition, where appropriate, I have made references to other chapters which contain detailed information on those particular topics, instead of repeating the whole thing. Finally, since most persons tend to read only the parts which interest them specifically, I have intentionally repeated some information in various chapters in order to make each chapter self-explanatory.

Some clinical ophthalmologists may comment that I have gone to excessive length in some places, in discussing the basic scientific facts, pathogeneses and controversies. But since these diseases are ischemic in nature, an in-depth understanding of the blood supply and blood flow of the optic nerve and other related issues is key to understanding their pathogeneses. Also, when dealing with a subject such as ischemic optic neuropathy, which has attracted ongoing controversy, one has to give a detailed scientific background. Based on the most current scientific facts, I have discussed controversial issues candidly and fully, sometimes discussing various issues raised in those controversies point by point, to place them in proper perspective. Some may consider that an unorthodox way of dealing with controversies in a book, but I feel that is only way the reader can logically understand the controversial issues and the subject. It is my sincere hope that the information in this book helps toward a wider and better understanding of the ischemic optic neuropathies and the controversies.

I have given frequently my own studies while discussing the subject. Since ischemic disorders of the optic nerve have been the focus of my research work since 1955, most of the information in the book is based on my published studies. A search of Medline and other indices of literature revealed thousands of articles by others, published on many aspects of ischemic optic neuropathies. Their scientific credibility varies enormously. It is impossible to cite all of them and one has to pick and choose. I have tried to cover as many relevant publications as possible. No doubt, I must have unintentionally missed some good material for one reason or another, and I apologize for that. I have liberally used material from my own previous publications where appropriate, when I do not have a better way to present or phrase it than I did in those publications. In general, I have tried to avoid information from anecdotal case reports or comments, which, in my opinion, do not necessarily provide valid information. I have also avoided, as far as possible, using comments from review articles written primarily by reviewers who have not themselves conducted scientific studies on the subject. Unlike many authors, I have chosen to describe the findings of my research studies in the first person rather than in the third person and passive voice; because I stand behind my work. (I am grateful that my publishers, Springer Verlag, do not object to that preference).

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Hayreh, S.S.

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