Atlas of Glomerular Histopathology

Paul H.M. Schillings
J. Herman Schuurmans Stekhoven

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The Authors

Paul H.M. Schillings
is Professor of Pathology and former Chairman of the Department of Pathology of the University Hospital St. Radboud, Nijmegen, the Netherlands. He obtained his MD in 1950. His doctoral thesis (State University of Leiden, 1964) concerned rheumatic heart disease. His professional interest during the last years concentrated on renal histopathology.

J. Herman Schuurmans Stekhoven
is staff member of the Department of Pathology of the University Hospital St. Radboud, Nijmegen, the Netherlands. He graduated in biology at the State University of Utrecht and received his PhD in Medical Physiology from the University of Nijmegen. Over the past 10 years he concentrated on the electron microscopic evaluation of renal biopsies.

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Contents

Acknowledgements VI

Preface VII

Chapter I The Normal Glomerulus and Its General Pathology 1

Chapter II Circulatory and Noninflammatory Vascular Disorders 22

Chapter III Glomerular Changes in Intravascular Coagulation 35

Chapter IV Noninflammatory Glomerular Lesions in Proteinuria and the Nephrotic Syndrome 46

Chapter V Diffuse Glomerulonephritis 70

Chapter VI Focal Glomerulonephritis 85

Chapter VII Glomerulonephritis in Systemic Disease 90

Chapter VIII Pyelonephritis and Interstitial Nephritis 105
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Preface

The study of an ever-increasing number of biopsies
offers the pathologist of today an excellent opportunity to
advance his experience about an early and reliable diagnosis
and to gain more insight into the dynamic aspects of
disease. Many organs have come within reach of the percutaneous
biopsy technique. Iversen and Brun (1951) were
the first to approach the kidney in this way. At a Ciba
Foundation Symposium on Renal Biopsy 10 years later it
appeared that already 5,120 biopsies had been performed in
15 renal centers. After another decade the significance of
the renal biopsy as an indispensable tool to unravel the
pathogenesis of renal disorders was emphasized by Seymour
et al (1971). Today, many clinicians have become familiar
with the technique of the percutaneous needle biopsy
which, however, is not entirely without risk.
The glomerulus, notwithstanding its minimal metabolic
activities, reveals a morphology which is by far the most
complex of the whole nephron. It is therefore scarcely
surprising that this fascinating structure can exhibit a large
number of reaction patterns, making it a most suitable
object for diagnostic investigation. Hence, the examination
of renal biopsies, as well as surgical and autoptic specimens
is focused on the glomerulus. The tubules, vessels and
interstitial tissue show only a limited range of morphological
changes in renal disease.
In the early days of pathology, the application of conventional
histological procedures failed to clarify many
details that are now considered essential for a precise diagnosis.
A most important achievement, accomplished by
Borst (1931), consisted in the ability to produce 'thin'
paraffin sections, 2 jim thick or even less. In spite of the not entirely satisfying staining of the basement membranes, Borst greatly contributed to the knowledge of both the normal and the pathological structure of the glomerulus. The introduction of the PAS technique, a simple and more or less specific staining for the glomerular basement membrane, was a great step forward and enabled McManus (1950) to compose a charming atlas on glomerular pathology. It was Jones (1951, 1957) who, by combining the thin sectioning technique with the new, selective and strongly contrasting methenamine silver staining procedure, was most successful showing both the basement membranes and the mesang’ium. Through these improved histological techniques it became possible to take maximal advantage of the excellent optical qualities of modern immersion objectives. This triad of achievements forged a link between optical microscopy on the one hand, and electron microscopy and immunofluorescence on the other. The two latter methods, however, require such technical equipment, skill and specialized knowledge that they unfortunately remain beyond the reach of many pathologists. Though not always of primary importance as to the establishment of a precise diagnosis, they play a decisive role in the elucidation of the pathogenesis of many renal disorders (Muehrcke et al, 1969; McCluskey, 1971). We share this view and claim that a properly prepared staining by the Jones’ method highly facilitates a correct diagnosis provided sufficient clinical information is at hand or, even better, a good rapport with the clinician can be achieved. Spargo (1975) has enumerated some glomerular disorders that cannot be reliably diagnosed by light microscopy alone. Being fully aware of these limitations, we offer this atlas to the practical pathologist dealing with both biopitic and autoptic specimens who has neither routinely access to the two additional methods referred to above nor the time to consult the many detailed publications of the last few years. Much attention has been given to the illustrations and their legends because they form the quintessence of this atlas. Some of them are electron micrographs and immunofluorescent pictures, which have been included where they were thought to facilitate the understanding of particular
lesions. The light optical micrographs were made of paraffin sections prepared with the Jones’ technique, followed by a hematoxylin-eosin staining. This combination provides a uniform and informative result which appears to full advantage in black and white micrographs and makes color printing redundant. The micrographs are reproduced at a magnification of 300 and 1,200 X only. The presentation at 300 X magnification of whole glomeruli was aimed at, both for the benefit of optimal information and the appreciative eye.

References