SILVA'S DIAGNOSTIC RENAL PATHOLOGY

THE KIDNEYS perform many vital functions, but their primary role as a filter of plasma, receiving approximately 25% of the cardiac output, makes them extremely susceptible to disease. These diseases often can only be diagnosed by renal biopsy, a complicated diagnostic procedure requiring that the pathologist integrate the findings of light microscopy, immunofluorescence, and electron microscopy. Because of the expertise required to practice renal pathology, many academic centers maintain a separately designated, specialized renal pathology laboratory for interpretation of medical renal diseases. This book covers all approaches and technical methods used by renal pathologists to diagnose a wide range of kidney diseases. Unlike most textbooks in the field, this book's level of coverage is situated midway between encyclopedic and superficial, with the needs of the practicing ("signing-out") pathologist in mind. While focusing on medical diseases of the kidney, the book also covers a full spectrum of renal tumors (both pediatric and adult). Its numerous diagnostic algorithms provide a simplified road map that directs the reader to the major patterns of interest. The text is illustrated with more than 1,000 photomicrographs and diagrams. The accompanying CD-ROM includes a supplemental set of images.

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Frontmatter
More information

ZHOU

To my loving wife, Jian Wang, and our wonderful children, Jason and Jaclyn

LASZIK

To my beautiful wife, Erika, and our wonderful children, Nandi, Laura, and Aron

NADASDY

To my wife, Gyongyi, and my daughters, Krisztina and Orsolya

D'AGATI

To my devoted husband, Edward Imperatore, and my loving children,

Edward and Paul, without whose constant support and encouragement

my academic career would not be possible

SILVA

To my lovely wife, Jean, and wonderful daughter, Lindsay

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Preface

"If you do not know the names of things, the knowledge of them is lost, too."

– Carl Linnaeus

Throughout our many combined years of teaching renal pathology, we have been impressed by the challenges to students learning the subject for the first time. There are many reasons why the study of renal pathology is considered difficult. First, there is insufficient knowledge of the normal histology/structure of the kidney. Second, one disease can manifest many different morphologic patterns, while a particular morphologic pattern can be produced by different diseases or etiologic factors. And finally, several different names (synonyms) have been applied to particular patterns or diseases. Yet, the many years of teaching have convinced us that there can be a systematic and orderly approach to the study of renal pathology. Therefore, a new book emphasizing an algorithmic, deductive approach to the interpretation of renal pathology seemed timely. This book organizes the various renal patterns and diseases in a standardized fashion, with emphasis on clinical–pathologic correlations. We have limited our inclusion of renal morphologic patterns to comparatively stable taxonomic groups covering the major diagnostic entities accepted by the published literature.

Standardized names and terminology are essential for communication among renal experts, whether they are clinicians or pathologists. The terminology used in this book is generally consistent with that used by most North American renal pathologists. Wherever possible, we have applied the widely recognized International Nomenclature of Disease (IND), a joint project of the Council for International Organization of Medical Sciences and the World Health Organization. The purpose is to ease communications and facilitate the storage and retrieval of medical information. As noted by the IND, a "few diseases have a single recognized name; most have several different…names. The principle objective of the IND is to provide…a single recommended name" (specific, unambiguous, self-descriptive, simple, and based on cause whenever feasible). It is meant to be a truly international language of disease. The importance of precise terminology and diagnostic criteria cannot be overstated.

The approach and classification used in this book are neither unique nor original. They are based on the "capture" of ideas from the many members of the Renal Pathology Society, Inc., and from major courses in the field, such as Medical Diseases of the Kidney, a postgraduate course held annually for more than 30 years by the Columbia University College of Physicians and Surgeons in New York City, under the direction of Dr. Vivette D'Agati. The approach to renal biopsy has been influenced enormously by Dr. Conrad L. Pirani, and it should come as no surprise that the editors of this book have either studied directly under him (V.D., F.G.S.) or been mentored directly by Dr. Pirani's student, Dr. Silva (X.J.Z., Z.L., and T.N.).

A useful classification (and the subsequent approach to diagnosis) should be based on the following requirements:

1. The classification should be clinically relevant and provide useful information to the clinician (about diagnosis, prognosis, identification of clinical subsets, optimal choice of therapy, evaluation of response to therapy, and future management).
2. It should be based on facts (reflecting the ideals of evidence-based medicine), be scientifically correct, and incorporate our current level of biologic understanding.
3. It should be relatively easy to use by pathologists throughout the world and be reproducible between observers.

The approach of *Silva's Diagnostic Renal Pathology*, which incorporates these principles, is morphologically based and designed for practicing anatomic (and renal) pathologists. By maintaining a high level of expertise in renal pathology, pathologists can ensure that the current trend of increasing use of renal biopsy for diagnosis and patient management will continue.

Many algorithms that collectively detail the clinical, laboratory, and pathologic patterns of renal disease have been included. These algorithms, based upon clinical and morphologic findings, will allow one to find the correct diagnosis. The algorithms provide a simplified road map that directs the reader to the major patterns of interest. To this end, we have adopted a combined "clinical and pathologic" classification scheme in this

book. We have always found it ironic that most dictionaries, atlases, and textbooks require a priori that one knows what something is (e.g., what the diagnosis is and how to spell a particular word) in order to look it up and find the relevant entry. We hope that this book will eliminate that problem.

We believe that the approach in this book, neither final nor perfect, will allow the student to discover and categorize the type of renal involvement, correlate it with the clinical and laboratory findings, and determine the renal prognosis and optimal therapy. Of course, there are always "varieties" or "cross-overs" or "dual diseases," which render exact classification difficult. Nonetheless, a good description is always reliable. More atypical or unusual cases are likely to be referred for renal biopsy, because the clinically obvious cases (e.g., minimal change nephrotic syndrome in children, acute postinfectious glomerulonephritis, diabetic nephropathy with retinopathy) often are not biopsied unless they exhibit atypical features. In the end, it is the renal morphology interpreted in an informed clinical context that leads pathologists to an accurate diagnosis. Although this book is intended as a practical guide for the diagnostic pathologist with primary responsibility for renal biopsy interpretation, as "clinical biologists," we should not lose sight of the pathogenetic factors behind the morphology. Thus, we have included a short section on "Pathogenesis" in each of the chapters.

The authors each bring their own unique personal insights to their individual chapters. However, we have attempted to bind them together through a unanimity of purpose, as reflected in their similar styles and analytic approaches.

At each step, the renal pathologist is integrating knowledge about the light microscopy, fluorescence microscopy, electron microscopy, renal functional studies, urinalysis, systemic findings, medication history, serologies, and radiologic studies. It is this multidisciplinary approach that constitutes the most rewarding aspect of renal pathology. Despite the complexity of the subject material, we hope that the approach outlined in this book will provide a user-friendly guide into this fascinating field.

As our mentor, Dr. Conrad Pirani, often said, it is important that clinical nephrologists and pathologists work closely together for the good of the patient. The pathologist cannot function in isolation. The most difficult diagnostic dilemmas can usually be solved by combining the knowledge of clinician and pathologist on an individual case. As Dr. Pirani has stated in a renal biopsy textbook, "[s]tructure and function have finally met at the microscope." The pathologist and nephrologist can learn a great deal from each other by reviewing cases together over the multiheaded microscope.

Lastly, we would like to thank the renal patients, physicians, and pathologists without whom we would not have had the opportunity to collect these biopsy materials for teaching purposes. We thank them for providing us with such valuable illustrative cases. We, pathologists, strive to understand what we see and place it in a diagnostic context that guides the nephrologist toward more specific therapies. As better and more targeted therapies are developed, an accurate biopsy interpretation will become even more important. It is highly likely that the renal biopsy will continue to be cost-effective for all those we serve – our patients and our clinicians.