RENAL PATHOLOGY

with

Clinical and Functional Correlations

Volume I

C. CRAIG TISHER
BARRY M. BRENNER

Renal Pathology

with Clinical and Functional Correlations

Volume I

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Preface

The discipline of renal pathology has enjoyed dramatic growth in the past 3 decades, in parallel with remarkable progress in clinical nephrology. Both areas of medical knowledge have benefited from expansion of our understanding of normal renal structure and function and of the selective influences on structure and function imposed by disturbances due to definable immunologic, infectious, vascular, and metabolic causes. Furthermore, the enormous benefits attributable to glucocorticoids, immunosuppressive drugs, and other therapies intensify the need to define and categorize renal structural injury at its earliest stages in order to salvage renal parenchyma and minimize permanent nephron destruction. This necessity for precise and thorough analysis of kidney biopsy specimens has fostered a crucial collaboration between the renal pathologist and the clinical nephrologist, and the resulting marriage of interests and effort has fueled splendid conceptual, methodologic, and interpretational advances.

As the title implies, *Renal Pathology with Clinical and Functional Correlations* embodies this evolving union in two volumes that synthesize renal structure, function, and clinical course into a dynamic resource designed to be helpful to all serious students of kidney disease. The chapters are authored jointly by leading specialists in renal pathology and medicine, thus ensuring that the material is both authoritative and accurate. By enlisting the efforts of a large number of contributors, it has been possible to acquire a significant body of information in a relatively brief span of time, further ensuring that the stated concepts, mechanisms, clinical and morphologic descriptions, and interpretations are as contemporary as possible.

Renal Pathology is organized into seven major sections which reflect, at least in part, an attempt to provide a practical working classification of kidney disease. We recognize, however, that no classification system yet devised is perfect, and our organizational scheme is no exception.

Part One: General Considerations provides a review of the clinical indications for kidney biopsy and a thorough step-by-step description of the proper manner in which to evaluate the kidney biopsy specimen. This section also includes an overview of structural and functional information pertaining to the nonimmunologic progression of kidney disease to end-stage. The final chapter in Part One presents a detailed description of the gross anatomy, the embryology, and the architectural organization of the human kidney.

Part Two: Glomerular Diseases begins with a detailed discussion of the structure and function of the normal glomerulus. This is followed by a consideration of the immunopathogenetic mechanisms that lead to glomerular injury. The remainder of Part Two comprises 13 chapters that discuss specific disease entities that are generally classified as glomerular in type. These include the proliferative, membranous, membranoproliferative, and anti-GBM forms of glomerulonephritis; minimal change nephrotic syndrome and the focal sclerosis complex; the nephropathies of drug addiction and acquired immunodeficiency; preeclampsia–eclampsia; and IgA nephropathy. Certain systemic diseases that lead primarily to glomerular disease are also considered in this section and include systemic lupus erythematosus, Schönlein-Henoch purpura, and mixed connective tissue disease. Other chapters provide descriptions of renal involvement in parasitic diseases and those forms of glomerulonephritis associated with systemic bacterial and viral infections.

Part Three: Tubular and Interstitial Diseases begins with a discussion of the structure and function of the normal renal tubule and interstitium, followed by a detailed review of the immunopathogenetic mechanisms of tubulointerstitial injury. The subsequent nine chapters include pathologic and clinical descriptions of such diverse entities as acute tubular necrosis and toxic nephropathy, cortical necrosis, infarction and atheroembolic disease, interstitial nephritis, pyelonephritis and reflux nephropathy, obstructive uropathy, analgesic nephropathy and papillary necrosis, Balkan nephropathy, and radiation nephropathy.

Part Three also includes a chapter devoted to the anatomy and the pathology of the juxtaglomerular apparatus, with particular emphasis on Bartter's syndrome.

Part Four: Vascular Diseases is introduced with a beautifully illustrated chapter that describes the structure and function of the renal vasculature. This is followed by a comprehensive review of mechanisms of vascular injury. The remainder of Part Four comprises five chapters that provide thorough pathologic and clinical descriptions of specific disease entities including scleroderma (progressive systemic sclerosis), polyarteritis nodosa, Wegener's granulomatosis, allergic granulomatous angiitis, and lymphomatoid granulomatosis. Other chapters describe the hemolytic-uremic syndrome, thrombotic thrombocytopenic purpura, postpartum renal failure, renal vein thrombosis, benign and malignant nephrosclerosis, and fibromuscular dysplasia.

Part Five: Renal Involvement in Heredofamilial, Metabolic, and Hematologic Diseases begins with a chapter dealing with hereditary nephritis and benign recurrent hematuria. Other heredofamilial diseases with renal involvement presented in this section include the nail-patella syndrome, lipodystrophy, Fabry's disease, lecithin-cholesterol acyltransferase deficiency, and the nephrotic syndrome of infancy. This section also includes chapters on cystic diseases and congenital malformations of the kidney. Metabolic disorders including diabetic nephropathy, uric acid and urate nephropathy, cystinosis, and oxalosis are discussed in detail. A chapter devoted to paraproteinemias and dysproteinemias includes descriptions of multiple myeloma, light chain deposition disease, amyloidosis, monoclonal gammopathy, Waldenström's macroglobulinemia, heavy chain disease, and POEMS syndrome. Part Five concludes with a description of the nephropathies of certain benign hematologic disorders including sickle cell anemia, sickle cell trait, other anemias, and polycythemic states.

Part Six: Renal Neoplasms is composed of two comprehensive chapters that address the entire spectrum of renal tumors in pediatric and adult populations.

The final section of the book, *Part Seven: The Renal Allograft,* addresses the rapidly expanding body of knowledge in this field. The initial chapter reviews the immunopathogenetic mechanisms of allograft rejection. The subsequent chapter is devoted to the pathology of the renal allograft and includes descriptions of the several forms of rejection, as well as of pyelonephritis, drug-induced interstitial nephritis and *de novo* and recurrent glomerulonephritis. The final chapter is devoted to a detailed discussion of cyclosporine nephrotoxicity.

An *Appendix* provides the reader with a practical guide to the proper handling and processing of kidney biopsy and nephrectomy specimens.

This work has been made possible by the dedication of a large number of outstanding scholars who have described in exquisite detail the breadth and depth of their knowledge and personal experience with the specific disease entities represented in this book. We express our gratitude to each contributor for the countless hours they have devoted to the writing of their respective chapters, and for their willingness to accept the suggestions of the Editors.

To the many outstanding professionals at the J.B. Lippincott Company, we extend our thanks for their patience, wise counsel, and assistance in the preparation and publication of this book. We especially wish to acknowledge the outstanding efforts of Ms. Rosanne Hallowell, Mr. Richard Winters, and Mr. Dean Manke, without whose cooperation and dedication to excellence this project would not have succeeded.

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