英文影印版

布伦纳－雷克托 肾脏病学

Brenner & Rector's THE KIDNEY

Sixth Edition

edited by

Barry M. Brenner

（第6版）

下册

科学出版社
Harcourt Asia
W.B.SAUNDERS

Volume 2

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VOLUME II

THE KIDNEY

Sixth Edition

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DEDICATED TO

Sarah and Beatrice

Jane

Robert, Jennifer, and Ronald

and to

John H. Dirks, M.D.

for his partnership
in helping to improve medical care and education
in regions of the world where ever so little adds so much

Preface

We can see farther than the ancients
not because of better vision or greater stature,
but because we have been lifted up by giants.

BERNARD DE CHARTRES
12th Century Philosopher

Brenner and Rector's *The Kidney,* now in its Sixth Edition, traverses the last quarter century in the time-line of nephrology. In the context of the time in which nephrology has been a formally recognized subspecialty of medicine, some four decades, this book has come to represent what many generously regard as a major instrument for continuously and comprehensively encompassing the discipline's base of knowledge. But as we sit on the threshold of a new millennium, it seems appropriate to remind ourselves that nephrology is in fact a much older, indeed ancient discipline with a noble and distinguished legacy that spans at least three previous millennia.

A bronze artifact closely resembling the human kidney and dating to 1300 B.C. was excavated from among the ruins of the Temple of Kition and at least thirteen references to the kidney can be found in the Old Testament. Before the time of Christ, Greek physicians prescribed botanical materials to promote diuresis and employed bloodletting and other means for removal of excess body fluids. Hippocrates (460–375 B.C.) was skilled in macroscopic details of urinalysis and promulgated the view that examinations of urine, pulse, and temperature were central to the evaluation of every patient. Chinese physicians of the Han dynasty (second century B.C.) recognized an association between hardening of the arteries and high salt intake. Yet it was not until Artaeus of Cappadocia (30–90 A.D.) and Galen (130–200 A.D.) that the kidney was recognized as the organ responsible for urine formation.

Nephrology, along with all natural science, saw little advancement in the early centuries following the fall of the Roman Empire. Some refinements in macro-uroscopy appeared in the works of Stephanus of Athens (late sixth century A.D.) and Theophilus of Byzantium (seventh century A.D.), but it was not until the tenth century A.D. that nephrology progressed, led by Rhazes and Avicenna, Arabic physicians who rekindled writings and teachings dealing with clinical entities now recognized as bacterial pyelonephritis, hepatorenal syndrome, nephrolithiasis, and acute glomerulonephritis.

From these modest beginnings, descriptive schools of nephrology emerged in Ravenna, Salerno, Cairo, and Cordoba in the early centuries of the second millennium A.D. followed in midmillennium by more in-depth explorations of renal structure and function in several other European centers, including Padua, Bologna, Catalonia-Aragon, Preci, Salamanca, and Montpellier.

By the middle 1800s, the structural complexity of the mammalian kidney was revealed and unraveled through improved optics and microscopy, with Bowman extending the earlier observations of Malpighi and Morgagni on the renal corpuscle (glomerulus), Henle and Schweigger-Seidel describing the tubule hairpin loops, and Schumlansky, many fine details of the intrarenal circulation. By this time, Ludwig had ascribed the initial event in urine formation to a process termed "ultrafiltration" and Catugno identified albumin in the urine of patients with nephrotic syndrome.

Physicochemical concepts began to replace prevailing views of vitalism and other forms of philosophical speculation by the middle to late nineteenth century. In addition to Ludwig, contributions of Dubois-Reymond, Heidenhain, and von Helmholtz transformed nephrology into a scientific discipline and set the stage for twentieth century investigators to define the various transport functions of the glomerular and tubule systems that are now recognized as underlying the excretory functions of the kidney. Blockall, Bostock, Cruickshank, Wells, Bright, and Schönlein extended Cotugno's inquiries into clinical renal disease. Frerichs, Traube, Wilks, Johnson, Gull, Sutton, and Mahomed, together with Bright, explored the relationship between high blood pressure and kidney disease—variously arguing whether the former is cause or consequence of the latter. By the early 1900s, Volhard and Fahr, and Klebs, advanced our understanding of "Bright's disease," then considered the major cause of chronic renal failure.

Progress beyond the early years of the twentieth century provides the scaffold upon which this textbook is constructed. Some elements of refinement in the understanding of the kidney and its diseases emerged prior to World War II, but it is clearly in the five decades since that we have witnessed the greatest progress. Increased funding for renal research, as with biomedical research generally, propelled advances in renal anatomy and physiology, biochemistry, pharmacology, bioenergetics and, more recently, molecular, cell, and developmental biology, genetics, and genomics. Mechanisms of disease involving immune, neoplastic, inflammatory, cytotoxic, and other pathways of injury have been rigorously defined and made the targets of a variety of therapeutic interventions. Reliance upon the tools of molecular cell biology and recombinant DNA technology in renal research is now universal. Renal physicians and surgeons proved that organ transplantation is possible and pioneered technologies for acute and chronic extracorporeal replacement of failed renal function, including methods for

repeated vascular access. New advances in the understanding of the basic processes and clinical mechanisms of disease will enable investigators in 1999 alone to submit more than 5000 abstracts of original contributions to the major international meetings of nephrologists and fill thousands of pages in more than a dozen scientific and clinical journals devoted exclusively to nephrology.

The Sixth Edition of *The Kidney* is then, among other things, a celebration of this explosive expansion of new knowledge, for it cites and integrates the fine details of each new discovery in the context of prior understanding, and always for the benefit of improving the diagnosis and management of patients with renal disease. My task as editor has been to guide the experts in the scope of their topics, compel balanced treatment of contentious issues, ensure timeliness, accuracy, and proper recognition of new discoveries, and secure bibliographies that are as up-to-date as possible, including thousands of references to papers appearing since publication of the Fifth Edition in 1996, with many hundreds bearing publication dates of 1998 and 1999. Text length has been tightly monitored so as to limit book size and cost. Yet four new chapters have been added, and eight others have been entirely redesigned and rewritten by newly invited experts who have brought a fresh perspective to areas of rapid progress. All other chapters have been scrutinized extensively and completely revised or thoroughly updated, often with the help of additional experts, thereby ensuring that the Sixth Edition represents the comprehensive, current, and useful resource that our readership merits at the launch of a new millennium. Even so, a single large text in nephrology can no longer accommodate the wealth of new information deemed worthy of consideration by the editor and authors. To meet this ever-increasing demand, the W.B. Saunders Company and the editor have begun to supplement the main text with carefully formulated companion volumes, thereby launching a comprehensive library of nephrology for readers with all levels of background and experience. The first two volumes in this series: *Therapy in Nephrology and Hypertension,* and *Dialysis and Transplantation,* edited by H.R. Brady and C.S. Wilcox, and M. Sayegh, W.F. Owen, Jr., and B. Pereira, respectively, have recently been published. Others soon to appear include *Hypertension* (S. Oparil and M.A. Weber, eds.), *Acute Renal Failure* (W. Finn and B. Molitoris, eds.), and *Fluid and Electrolyte Disorders* (T.J. DuBose and L. Hamm, eds.).

As in the past my goal for this new edition is to sustain and extend the theoretical and practical knowledge base of nephrology for our readers. Credit for any success in achieving this goal must flow to the many devoted scholars who have given freely of their time and expertise to create an outstanding manuscript. To all, I express heartfelt thanks for fine contributions and splendid cooperation. Numerous colleagues and close associates provided valuable advice for improvement in text organization and content, and I gratefully acknowledge their suggestions. I also express sincere appreciation to Ms. Michelle Deraney for expert secretarial assistance. To the many professionals at the W.B. Saunders Company who labored to produce the very best book possible, I warmly acknowledge their guidance and support. In particular, I thank Richard Zorab, Senior Medical Editor, and Cathy Carroll, Developmental Editor, the superb production team led by Linda R. Garber, Gina Scala, Robert Quinn, and Nicholas Rook, and W.B. Saunders' President, Lewis Reines.

In *Death in Venice,* Thomas Mann wrote "Solitude gives birth to the original in us . . . ." For the editor of an ongoing, indeed ever-expanding project such as *The Kidney*, solitude is essential to the timely completion of the many tasks involved in the planning and realization of each edition. But solitude has a steep price, the most costly component of which is the time away from family and friends. To my wife, Jane, and our children, Rob, Jennie, and Ron, and to all the others whom I've neglected, unbounded appreciation for your understanding and support is my only coin.

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July, 1999

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