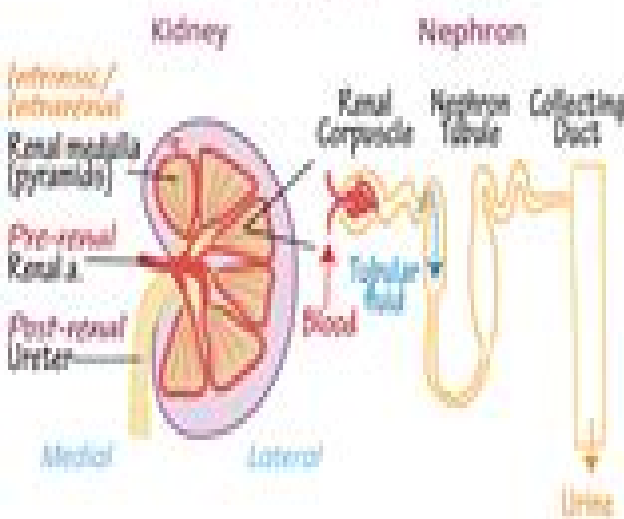




RENAL PATHOLOGY OVERVIEW

ANATOMY



RENAL FAILURE

Excess retention of nitrogenous waste products & electrolyte disturbances

- Metabolic Acidosis
- Dyslipidemia
- Hyperkalemia
- Uremia
- $\text{Na}^+/\text{H}_2\text{O}$ retention (w/ HF, pulm. edema, HTN)
- Growth retardation/ dev. delay
- Erythropoietin deficiency (anemia)
- Renal osteodystrophy

ACUTE KIDNEY INJURY: ↑ Creatinine ↓ Urine volume.

Pre-renal (hemodynamics):

- Intravascular volume depletion
- Bilateral renal stenosis
- Heart failure
- ACE inhibitors, ARBs
- Hypotension

Intrinsic/Intra-renal

- Vascular: vasculitis, malignant hypertension, TTP-HUS
- Glomerular:
 - Nephrotic syndrome: focal segmental glomerulosclerosis, membranous nephropathy, minimal change disease
 - Nephritic syndrome: Infection-associated, IgA nephropathy, Anti GBM, etc.
- Tubular: Acute tubular necrosis
- Interstitial: Acute interstitial nephritis
- Urine $\text{Na}^+ > 40 \text{ mEq/L}$, $\text{FeNa} > 2\%$

Post-renal (obstructive)

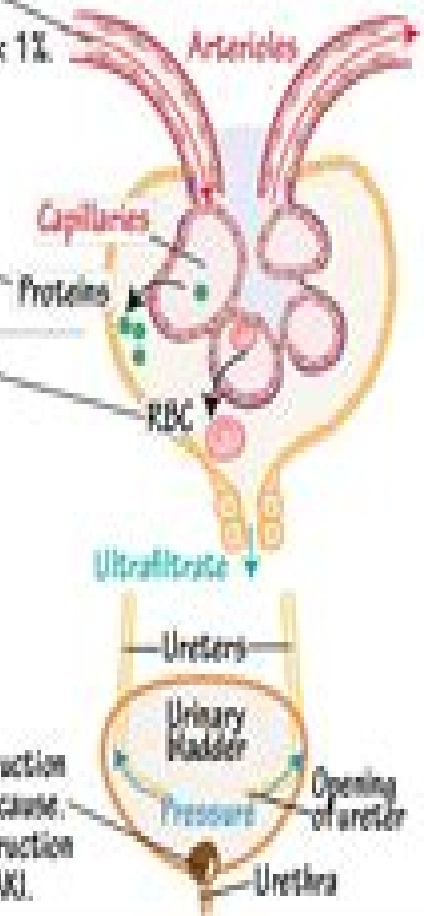
- Congenital: renal dysplasia
- Tumors (prostate, etc. cause compression)
- Stones: calcium, ammonium magnesium phosphate, uric acid, cystine.
- Infection

CHRONIC KIDNEY INJURY

- Diabetes
- 1° Glom. nephritis
- Hypertension (2° Glom. nephritis)
- AD polycystic kidney disease

Azotemia = Inc Blood Urea Nitrogen (BUN), creatinine, other waste products in the blood.

- ↓ Renal Blood Flow = ↓ GFR
- Urine $\text{Na}^+ < 20 \text{ mEq/L}$, $\text{FeNa} < 1\%$
- SCr drops with fluid admin.



- Bladder outlet obstruction is the most common cause.
- Unilateral renal obstruction less often assoc. w/ AKI.

Uremia = Azotemia that leads to cluster of signs/symptoms in various body systems. Usually in CKI, can be AKI

End-Stage Renal Disease = GFR is $< 5\%$ normal. Terminal stage of uremia.



Renal Pathology

Stephen M. Bonsib



Renal Pathology:

Fundamentals of Renal Pathology Agnes Fogo, Jan A. Bruijn, Arthur H. Cohen, Robert B. Colvin, J. Charles Jennette, 2007-04-03 Written by a team of 5 well respected and world renowned renal pathologists The Fundamentals of Renal Pathology will provide the general pathologist pathology residents and fellows in training the renal pathologist and the nephrologist and nephrology resident with a compact and up to date resource on the basics of renal pathology Beginning with the basic concepts and methods in renal pathology the text covers renal anatomy including gross and microscopic appearance and pathogenic mechanisms in renal diseases With an emphasis on clinical pathological correlation and differential diagnosis the handbook will provide discussions on such topics as glomerular disease with nephritic and nephritic syndrome presentations systemic diseases affecting the kidney vascular diseases affecting the kidney and much more Abundantly illustrated with 107 photographs throughout and 84 in color *Silva's Diagnostic Renal Pathology* Xin J. Zhou, Fred G. Silva, 2009-04-27 The kidneys are responsible for many key bodily functions but their primary role as a filter of toxins makes them extremely susceptible to disease Often these diseases can only be diagnosed through a renal biopsy a complicated procedure requiring ancillary immunologic and molecular diagnostic techniques This book covers all methods used by renal pathologists to diagnose a wide range of kidney diseases Unlike most literature on renal pathology this book is situated on the midpoint between encyclopedic and superficial coverage written for the signing out pathologist While focusing on tumors and transplantation rejection a full spectrum of infectious inflammatory and congenital disorders is covered in both pediatric and adult populations and is analyzed not only by light microscopy but by each applicable diagnostic modality available The text is illustrated with more than 1 000 photomicrographs and diagrams including a CD ROM of all images **Atlas of Medical Renal Pathology** Stephen M. Bonsib, 2014-07-08 The kidney is an organ with complex organogenesis susceptible to numerous misadventures in development and is exposed to a diverse array of insults of hematogenous and lower urinary tract origin This Atlas of Medical Renal Pathology provides an overview of the development macroscopic and microscopic features of the normal kidney This is followed by a comprehensive survey of developmental and cystic kidney diseases vascular diseases and tubulointerstitial diseases An emphasis is placed on gross diagnostic findings with detailed histological correlates In addition the histological immunofluorescent immunohistochemical and ultrastructural features of the major glomerular diseases and renal transplantation pathology are presented This compendium of non neoplastic kidney diseases illustrates the vast majority diseases you are likely to encounter in surgical and autopsy pathology **Diagnostic Atlas of Renal Pathology E-Book** Agnes B. Fogo, Michael Kashgarian, 2016-09-21 Recognize and diagnose a wide range of renal pathologic entities with Diagnostic Atlas of Renal Pathology 3rd Edition In this edition Drs Agnes B Fogo and Michael Kashgarian use hundreds of high quality illustrations to clearly depict the pathologic features and clinical manifestations of both common and rare renal disorders Extensive updates to the text keep you current with the knowledge

you need for clinical practice or continuing education and certification More than 700 images of light immunofluorescence and electron microscopy for each diagnostic entity with correlations to clinical presentation and pathogenesis Focused detailed discussions on key characteristic pathologic findings and prognostic pathogenetic and etiologic information An in depth examination of pathophysiology clinical presentations and the latest evidence based practices User friendly format features tables and sidebars with key points and differential diagnoses and chapters that include concise templated discussions regarding the etiology and pathogenesis of the disorder Consult this title on your favorite e reader conduct rapid searches and adjust font sizes for optimal readability A new chapter describing a logical approach to differential diagnosis New insights into pathogenesis and classification of diseases New coverage of aging and the kidney endemic diseases transplant lupus related kidney diseases Mesoamerican nephropathy ApolL1 related nephropathies C3 glomerulopathies and thrombotic microangiopathies Recent results of consensus conferences on vasculitides and renal neoplasia [Handbook of Renal Biopsy Pathology](#) Alexander J. Howie,2001 This short and clear book has a different approach from others on the pathology of the kidney Most texts consider each disease separately on the assumption that the diagnosis has been made This text is more useful in practice and shows how a diagnosis can be given on a renal biopsy specimen when the clinical indication for the biopsy is known There is guidance on differential diagnosis with notes on other matters including pathogenesis prognosis and where relevant the historical background of common renal disorders This interesting book will be helpful to pathologists and trainee pathologists who look at renal biopsy specimens nephrologists renal transplant surgeons and their trainees who take the specimens medical students who will be the next generation to take and report the specimens nurses in nephrology dialysis and renal transplant units and pharmacists and others dealing with people with diseases of the kidney **Silva's Diagnostic Renal Pathology** Xin J. Zhou,Zhou,Zoltan G. Laszik,Tibor Nadasdy,Vivette D. D'Agati,2017-03-02 An algorithmic approach to interpreting renal pathology updated in light of recent advances in understanding and new classification schemes **Practical Renal Pathology, A Diagnostic Approach E-Book** Donna J. Lager,Neil Abrahams,2012-11-07 Practical Renal Pathology helps you apply a systematic pattern recognition approach to achieve more accurate diagnoses of both neoplastic and non neoplastic diseases of the kidneys This volume in the Pattern Recognition Series helps you to efficiently and confidently evaluate even the most challenging histologic specimens Consult this title on your favorite e reader with intuitive search tools and adjustable font sizes Elsevier eBooks provide instant portable access to your entire library no matter what device you re using or where you re located Compare your specimens to commonly seen patterns categorize them accordingly and turn directly to in depth diagnostic guidance using the unique pattern based Visual Index at the beginning of the book Assess key pathologic and clinical aspects of both neoplastic and non neoplastic conditions with over 750 high quality full color images that help you evaluate and interpret biopsy samples Benefit from expert guidance in key areas such as renal biopsy interpretation handling of nephrectomy specimens pathology relevant

to renal transplantation and pathology of unusual renal neoplasms Progress logically from the histologic pattern through the appropriate workup around the pitfalls to the best diagnosis **Heptinstall's Pathology of the Kidney** J. Charles Jennette,Vivette D. D'Agati,Jean L. Olson,Fred G. Silva,2014-07-11 If you re looking to deepen your understanding of kidney disease look no further than Heptinstall s Pathology of the Kidney 7th Edition Authored by the world s most accomplished renal pathologists this image rich text conveys the intricacies and comprehensiveness of renal disease offering powerful diagnostic and treatment recommendations from decades of clinical research Stay up to date on the cutting edge of kidney research and treatment and offer your patients the best therapeutic options and preventative measures available today

Diagnostic Pathology: Kidney Diseases Robert B. Colvin,Anthony Chang,Lynn D. Cornell,2023-07-24 This expert volume in the Diagnostic Pathology series is an excellent point of care resource for practitioners at all levels of experience and training Covering the full range of common and rare nonneoplastic renal diseases it incorporates the most recent scientific and technical knowledge in the field to provide a comprehensive overview of all key issues relevant to today s practice Richly illustrated and easy to use Diagnostic Pathology Kidney Diseases fourth edition is a visually stunning one stop resource for every practicing pathologist nephrologist resident student or fellow as an ideal day to day reference or as a reliable training resource Provides a comprehensive source for key pathologies and clinical features of more than 265 kidney diseases Features two dozen new chapters on a variety of timely topics including COVID 19 nephropathies xenografts artificial intelligence AI digital pathology analysis harmonized nephropathology terminology newly identified types of amyloidosis common artifacts and pitfalls on kidney biopsy vaccination associated renal disease crystal nephropathies and much more Includes updates from the International Kidney and Monoclonal Gammopathy IKMG research group the American College of Rheumatology European League Against Rheumatism ACR EULAR classification criteria for IgG4 related disease Banff Foundation for Allograft Pathology and others Details updated genetic causes of nephrotic syndromes and antinephrin antibodies in podocytopathies by the investigator who discovered it Discusses the newly identified variant IgG nephropathy and novel membranous autoantigens Contains chapters on techniques including immunofluorescence on paraffin sections C4d staining and polyomavirus detection in tissue Contains more than 4 300 print and online images including high resolution photographs and histologic images full color medical illustrations radiologic images and more Employs consistently templated chapters bulleted content key facts a variety of tables annotated images pertinent references and an extensive index for quick expert reference at the point of care Shares the expertise of internationally recognized authors who provide fresh perspectives on multiple topics with a particular emphasis on practical information that directly assists in making and supporting a diagnosis Includes an eBook version that enables you to access all text figures and references with the ability to search customize your content make notes and highlights and have content read aloud **Renal Pathology in Biopsy** H.U. Zollinger,M.J. Mihatsch,2012-12-06 Vor die Therapie setzten die Gotter die Diagnose Otto NiigeJi Renal biopsy

has decisively enriched renal diagnostics Kidney diseases may be monitored during their entire course and new techniques such as immunofluorescence and electron microscopy may be systematically applied resulting in novel insights into the morphogenesis pathogenesis and etiology of kidney lesions These insights in turn have served as new starting points in the spirit of the quotation above for the institution of causal therapy by the clinician This work presents our findings based on 20 years of experience in evaluating renal biopsies As of the end of 1974 our computer supported systematic clinical morphologic and follow up evaluation of case material consisted of over 2000 biopsies including 679 examined by electron microscopy and 400 by immunofluorescence microscopy The subsequent 500 biopsies 400 studied by electron microscopy and 300 by immunofluorescence were considered qualitatively only In order to enhance qualitative findings with quantitative data it was necessary to devise new methods for quantifying electron microscopic findings Additionally we attempted to correlate cytologic and immunofluorescent observations to integrate the isolated findings of electron microscopy into a vital cytologic pattern of reactions We also attempted to evaluate the almost overwhelming flood of publications especially those appearing within the last 10 years The idea for this book was conceived a decade ago At that time however our own experience in renal biopsy diagnostics seemed insufficient to support such a major undertaking

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