RENAL BLOCK
Pathology

OBJECTIVES 2014

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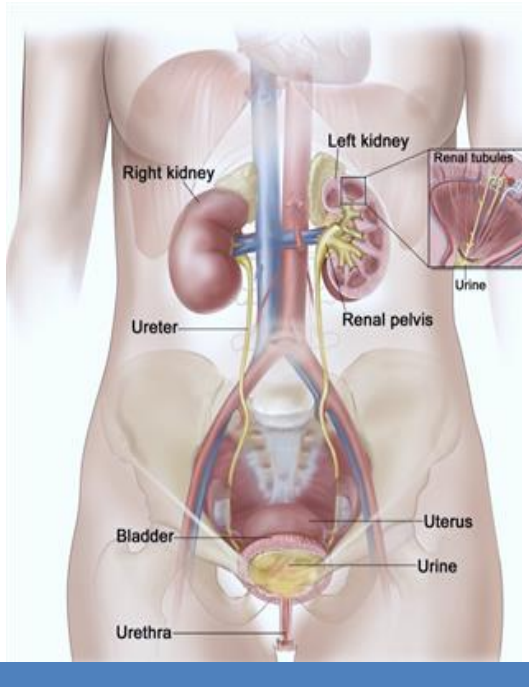

Prescribed reading:

Pathologic Basis of Disease, Robbins and Cotran

ACUTE KIDNEY INJURY

Objectives:

Upon completion of this lecture the students will be able to:

1. Describe the guidelines for performing renal biopsy.
2. Recognize the different types of acute kidney injury.
3. Recognize the clinical manifestations of acute kidney injury.
4. Describe the pathological findings in acute kidney injury.

Introduction:

Acute kidney injury (AKI) may occur in ambulant and hospitalized patients. The renal biopsy is not performed in all cases of acute kidney injury, especially when ischemia or drugs are suspected to be the cause of the kidney injury and the patient is treated conservatively, however, in complicated conditions, the renal biopsy will disclose in the majority of the situations, the cause of the acute kidney injury. (glomerular, interstitial, vascular or tubular origin) , hence the lecture will emphasize the importance of the renal biopsy in AKI.

Key Outlines:

1. Brief review of the normal anatomy and histology of the kidney and urinary tract.
2. Terminology used in renal diseases.
3. Etiology of acute kidney injury.
4. Pathophysiology of acute kidney injury.
5. Clinical manifestations with diagnostic approach.
6. Pathological evaluation: Gross and histological findings in cases of acute renal injury and failure.
7. Conclusion and "take home" messages.

Summary:

Acute kidney injury is related in the majority of cases to acute tubular necrosis, however, there are other factors which may cause AKI, such as crescentic glomerulonephritis, vasculitis, acute tubulo-interstitial nephritis etc…. The biopsy will help to recognize the cause of the AKI, and outline for the clinician the adequate therapeutic regimen for each patient.

Take home message:

The student will be able to define AKI, recognize the causes and the pathogenetic mechanisms involved in AKI. The student will be able to describe the different histopathological features seen in cases of AKI. Furthermore, the student will understand the different steps involved in the diagnosis and treatment of AKI.

PATHOLOGY OF THE RENAL ALLOGRAFT

(IMMUNE AND NON-IMMUNE MEDIATED INJURIES)

Objectives:

At the end of the lecture the students will be able to:

1. Recognize the concept of renal allograft.
   Describe the pathology of rejection and differentiate acute cell-mediated and antibody-mediated rejection.
2. Differentiate between acute and chronic rejection.
3. Brief account on principal opportunistic infections and drug toxicity encountered in renal transplant recipients.

Introduction:

The renal biopsy for allograft dysfunction is an integral part of the diagnostic tools used to recognize the underlying mechanisms to the graft abnormality, and hence represent a solid basis for the selection of the therapeutic regimen to be given. The lecture is meant to be a practical guide to the approach towards renal allograft pathology with emphasis on the immune and non-immune causes of graft failure.

Key Outlines:

1. Adequacy of the renal allograft biopsy.
2. Acute T-cell mediated rejection.
3. Acute antibody-mediated rejection.
4. Pathology of chronic rejection.
5. Pathology of the principal infections of the renal allograft: CMV-polyoma viruses.
6. Pathology of acute and chronic drug toxicity.

Summary:

Renal allograft failure may be secondary to a variety of causes. Renal allograft biopsy will help in the recognition of the different types of rejection if and when present like: Acute versus Chronic, cell-mediated versus antibody- mediated. The biopsy will also help in the diagnosis of any drug toxicity, (acute versus chronic) and in the recognition of the histological abnormalities secondary to infections.

Take home message:

The student will learn the pathogenetic mechanisms involved in renal allograft rejection. The student has to recognize the importance of the biopsy in differentiating between immune related dysfunction (rejection) and other non-immune causes (i.e infections, drug toxicity…) as well as to the treatment to be given in such cases.

TUMORS OF THE KIDNEY AND URINARY BLADDER

Objectives:

At the end of the lecture the students will be able to:

1. Recognize common benign tumors of the kidney.
2. Describe the pathological features of renal cell carcinoma and Wilm's tumor.
3. Recognize the predisposing factors and features of transitional cell and squamous carcinoma of the urinary bladder.

Introduction:

A remarkable variety of benign and malignant tumors arise in the kidneys and urinary tract of adults and children. The diagnostic challenges that these lesions pose to the pathologist are made greater by the wide spectrum of appearances of the benign and more specifically malignant tumors of the kidneys and urinary tract. The lecture will address the different histopathological variants of these tumors arising in the upper and lower urinary tract. Special emphasis on clear cell carcinoma of the kidney and transitional cell/squamous carcinomas of the urinary bladder will be considered.

Key Outlines:

1. Benign tumors of the kidney: Adenoma and Angiomyolipoma.
2. Renal Cell Carcinoma: Incidence, Clinical Presentation, Gross and Histological Features and Prognosis.
3. Wilm's tumor (nephroblastoma): Incidence, Clinical Features, Genetic and Histological Characteristics.
4. Transitional Cell and Squamous Carcinoma: Predisposing Factors, Incidence, Clinical Pathological Features and Prognostic Indicators (Grade and Stage).

Summary:

Renal cell carcinoma in adults and Wilm's tumor in children, as well as the transitional cell carcinoma of the urinary tract including the bladder are entities to be recognized in the proper clinical setting and associated symptoms and signs. The association of squamous cell carcinoma with schistosomiasis is a well-known occurrence. The prognosis of all malignant tumors of the kidney and urinary tract is related to the grade, stage and appropriate treatment.

Take home message:

The student will become aware of the various types of benign and malignant kidney and urinary tract neoplasms, their occurrence as part of a syndrome together with the clinical and pathological features and the prognosis of these lesions.

PATHOLOGY OF THE FIVE MAJOR RENAL GLOMERULAR SYNDROMES

Objectives:

At the end of the teaching sessions (2 lectures) the students will be able to:

1. Recognize the five major renal glomerular syndromes.
2. Describe the main differential pathological diagnosis for each syndrome.
3. Perform a clinicopathological correlation.
4. Describe the patterns of injury of each syndrome.
5. Brief account on congenital/inherited nephropathies.

Introduction:

The renal biopsy for non-neoplastic kidney diseases has gained tremendous importance in the last few decades. The lecture is meant to be a practical guide to the approach to renal biopsy in the five major clinically outlined glomerular syndromes. The patterns of injury in the nephrotic, nephritic, rapidly progressive ,asymptomatic hematuria/proteinuria and chronic renal failure (chronic glomerulonephritis) will be addressed. The segregation of the pattern of injury in the glomeruli into focal ,diffuse, segmental or global will be emphasized. The assessment of the other components present on the renal biopsy will be considered. The evaluation of the kidney biopsy and correlation with the clinical findings is also of utmost importance.

Key Outlines:

1. The nephrotic syndrome: (Minimal change, FSGS, membranous, diabetes).
2. The nephritic syndrome: (Acute post streptococcal Glomerulonephritis GN, Membrano-proliferative GN, and renal manifestations of Systemic Lupus Erythematosus).
3. Rapidly progressive GN: (Crescentic GN)
4. Asymptomatic Hematuria / Proteinuria: IgA Nephropathy.
5. The Chronic Nephritic Syndrome: (Chronic Renal Failure).
6. A brief account on congenital nephropathies will also be given.

Summary:

The five major clinical glomerular syndromes are associated with different patterns of injury. The approach to a renal biopsy taken in the setting of any of these clinical syndromes is systematic, starting with assessment of the renal biopsy adequacy to the analysis, the pathological features of the four components of the renal biopsy and the drawing of the final conclusion (diagnosis).

Take home message:

The student will investigate the approach to a kidney biopsy in a given setting and into the logical steps to be taken to reach a diagnosis either in the context of a disease primarily involving the kidney or in a situation where involvement of the kidney is part of a systemic disease. Furthermore, the student should recognize the pathological findings related to chronicity.

PATHOLOGY OF THE INFECTIONS OF THE KIDNEY AND URINARY TRACT

Objectives:

At the end of the two lectures the students will be able to:

1. Recognize the predisposing factors for infections of the kidney and urinary tract.
2. Describe the different types of infections in the kidney and urinary tract.
3. Recognize the clinicopathological features of acute and chronic pyelonephritis.
4. Describe the causes of urinary tract obstruction.
5. Recognize drug induced nephritis.

Introduction:

Urinary tract infections are common diseases seen in the medical practice. Systemic as well local factors play a major role in the initiation, recurrence and outcome of these infections. The predisposing factors including the congenital as well as the acquired causes will be discussed. A pathological description of the different types of infection will be considered. An overview of the cystic diseases of the kidney as well as medications related nephritis will be considered.

Key Outlines:

1. Urinary Tract Obstruction: causes and clinical manifestations in children and adults.
2. Infections of the Urinary Tract: Predisposing Factors and Clinical Manifestations.
3. Pathology of Acute and Chronic Pyelonephritis including causes and complications of urolithiasis.
4. Drug induced interstitial nephritis and renal papillary necrosis (necrotizing papillitis).

Summary:

Urinary tract infections induce a variegated histopathological spectrum depending on the location, type of infectious agent, predisposing factors as well as the associated systemic conditions. An overview of the different patterns will be considered with clinical correlation.

Take home message:

The student will investigate the causes and pathogensis of kidney and urinary tract infections and the histological findings related to the upper and lower urinary tract infections.