

Tubulointerstitial diseases of the kidney

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1. What are the clinical syndromes that suggest a primary injury in the tubules or interstitium?
 - Fanconi syndrome: Complete proximal tubule failure
 - Renal Tubular Acidosis (Distal type 1 RTA; Proximal type 2 RTA)
 - Defective urinary concentrating ability: Polyuria (Medullary injury; Failure to generate corticomedullary osmol gradient; Nephrogenic diabetes insipidus)
2. What are the histopathologic patterns of primary tubulointerstitial injury and what is their significance?
 - Acute tubular necrosis – ischemia or nephrotoxins
 - Interstitial nephritis
 - Primarily lymphohistiocytic – Cell mediated immune reactions (anti-viral or allergic drug reaction)
 - Primarily neutrophilic – bacterial infection (“Pyelonephritis”)
 - Intra-renal tubular obstruction (Pigments, myeloma light chains, urate, oxalate, calcium)
 - Non-specific chronic changes (tubular atrophy and interstitial fibrosis)

Vascular diseases of the kidney

1. What are the patterns of renal ischemia and associated causes? (see table in notes)
2. What is the relationship between hypertension and renal disease?
 - Renal disease as a cause of hypertension
 - Hypertension as a cause of renal injury (Arterio-nephrosclerosis)
3. What is thrombotic microangiopathy (TMA)?
 - TMA is a morphologic pattern consisting of severe microvascular injury and thrombosis
 - Associated with HUS, TTP, malignant hypertension and scleroderma
4. What are the causes of TMA and HUS?
 - Shiga toxin (Verotoxin) from enterohemorrhagic E. coli (90% of cases of HUS)
 - Drug-related (cyclosporine, mitomycin C, ticlopidine, oral contraceptives)
 - Hereditary (complement factor H deficiency)
 - Antiphospholipid antibody syndrome
 - Post-partum renal failure
 - Idiopathic
5. What are the renal syndromes associated with atherosclerosis?
 - Renal artery stenosis
 - Renovascular hypertension (role of renin-AII-aldosterone in the Goldblatt 2-kidney, 1-clip model)
 - Chronic ischemic nephropathy (volume overload hypertension)
 - Atheroembolic renal failure
 - Blue toes after vascular intervention
 - Curious presence of eosinophilia and hypocomplementemia