

XIX. Diseases of the Urinary System



Haematuria

(The clinical condition of passage of blood in the urine).

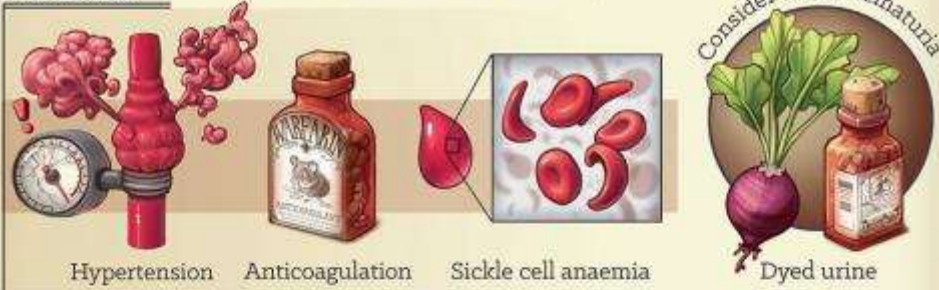
1. Urinary tract:

	(A) Kidney:	1. Congenital polycystic disease.
		2. Glomerular disease: (a) Acute glomerulonephritis. (b) Embolic glomerulonephritis.
		3. Tubular disease: Haemoglobinuric nephrosis.
		4. Vascular disease: (a) Malignant nephrosclerosis. (b) Infarcts (transient bleeding).
		5. Interstitial disease: (a) Tuberculosis. . (b) Pyelonephritis (occasional).
		6. Tumours specially: (a) Hypernephroma. (b) Haemangioma.
		7. Lithiasis (Renal calculi).
		8. Miscellaneous : (a) Trauma; movable kidney (nephroptosis); rupture. (b) Certain drugs (sulphonamides; barbiturates). (c) So-called idiopathic haematuria (some cases of which may be un-identified haemangioma). (d) (Lupus erythematosus, incompatible blood transfusion and acute cortical necrosis.
	B. Renal pelvis and ureters:	1. Haemangioma and 2. Capillary naevi. 3. Calculi. 4. Bilharziasis. 5. Trauma. 6. Ureteritis and pyelitis granularis.

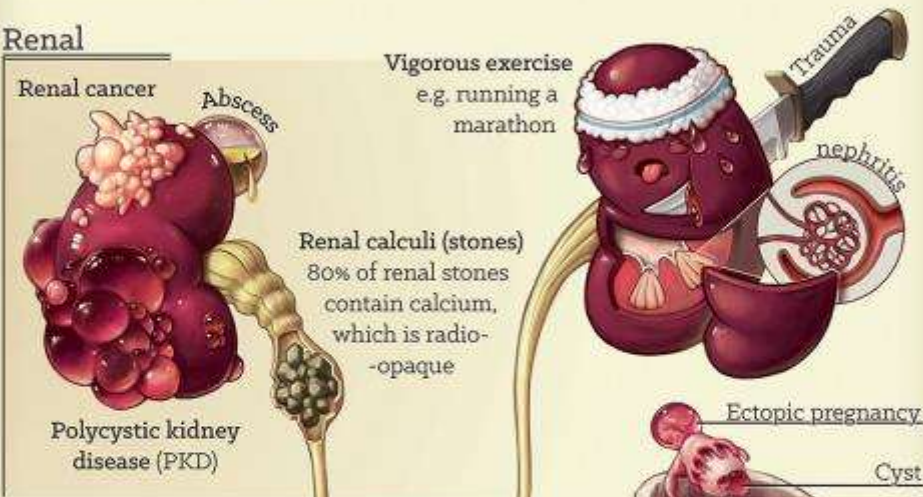
	C. Bladder:	<ol style="list-style-type: none"> 1. Cystitis: <ol style="list-style-type: none"> (a) Acute (non-specific and specific). (b) Chronic (non-specific) and specific (tuberculosis). (c) Bilharziasis. 2. Tumours: <ol style="list-style-type: none"> (a) Primary carcinoma : Papillary, sessile or ulcerative). (b) Secondaries. 3. Calculi and foreign bodies. 4. Fistulae and trauma. 5. Varicosities.
	D. Urethra:	<ol style="list-style-type: none"> 1. Urethritis (acute inflammatory; bilharzial). 2. Tumours. 3. Calculi. 4. Trauma. Foreign bodies and stricture.
II. Extra-urinary lesions:		
A) Adjacent organs:		<ol style="list-style-type: none"> 1. Inflammation (of appendix, pelvic colon, rectum, uterine tubes, prostate and seminal vesicles). 2. Tumours (of cervix, corpus uteri, prostate, rectum, peritoneum and lymph nodes). 3. Fistula.
B) Haemorrhagic blood diseases		<ol style="list-style-type: none"> (a) Purpura, (b) Leukaemia, (c) Aplastic and sickle cell anaemias, (d) Haemophilia and (e) Hypo-prothrombinaemia. (f) Anticoagulant therapy heparin and aspirin
C) Systemic diseases		<ol style="list-style-type: none"> (a) Scurvy, (b) Septicaemia, (c) Rickettsial diseases, (d) Some collagen diseases and (e) Specific fevers such as malaria).
D) Miscellaneous		<ol style="list-style-type: none"> (a) Paroxysmal hemoglobinuria; (b) Some cases of so-called essential haematuria; (c) Certain poisons such as turpentine, cantharidin and carbolic acid; (d) Oxaluria; (e) Contamination with menstrual blood). (f) Malignant hypertension (g) Bacterial endocarditis

Causes of haematuria (blood in the urine)

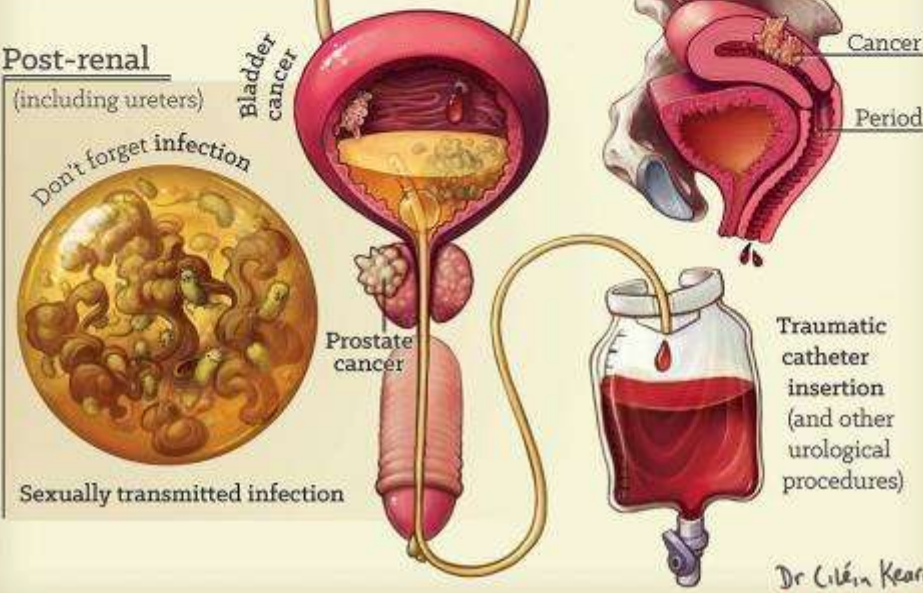
Pre-renal



Renal



Post-renal (including ureters)





RENAL

- Benign renal mass (angiomyolipoma, oncocytoma, abscess)
- Malignant renal mass (renal cell carcinoma, transitional cell carcinoma)
- Glomerular bleeding (IgA nephropathy, thin basement membrane disease, hereditary nephritis - Alport's syndrome)
- Structural disease (polycystic kidney disease, medullary sponge kidney)
- Pyelonephritis
- Hydronephrosis/ distension
- Hypercalciuria/ hyperuricosuria
- Malignant hypertension
- Renal vein thrombus/ renal artery embolism
- Arteriovenous malformation
- Papillary necrosis (sickle-cell disease)

MIMICS OF HEMATURIA

Menstruation
 Drugs (pyridium, phenytoin, rifampin, nitrofurantoin)
 Pigmenturia
 Beeturia

URETER

- Malignancy
- Stone
- Stricture
- Fibroepithelial polyp
- Post-surgical conditions (ureteroiliac fistula)

Renal and/or upper or lower collecting system:

- Infection (bacterial, fungal, viral)
- Malignancy
- Urolithiasis
- Tuberculosis
- Schistosomiasis
- Trauma
- Recent instrumentation including lithotripsy
- Exercise-induced hematuria
- Bleeding diathesis/ anticoagulation*

Upper collecting system

Lower collecting system

BLADDER

- Malignancy (transitional cell carcinoma, squamous cell carcinoma)
- Radiation
- Cystitis

PROSTATE/URETHRA

- Benign prostatic hyperplasia
- Prostate cancer
- Prostatic procedures (biopsy, transurethral resection of the prostate)
- Traumatic catheterization
- Urethritis
- Urethral diverticulum



Hematuria Differential Diagnosis

SWITCH GPS

- **S**tones, **S**ickle cell disease, **S**LE
- **W**egener's granulomatosis
- **I**nfection
- **T**rauma, **T**umor, **T**TP (Thrombotic thrombocytopenic purpura)
- **C**ryoglobulinemia
- **H**US, **H**enoch-Schönlein purpura, **H**emophilia

- **G**oodpasture syndrome, **G**lomerulonephritis
- **P**CKD (polycystic kidney disease)
- **S**ponge disease (medullary sponge disease)



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Pseudo-hematuria

Do not assume every reddish urine is a sign of pseudo-hematuria



**D
XD**

microscopic hematuria



gross hematuria

