Casts

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| --- | --- |
| **Urine findings** | **Meaning** |
| RBC casts | GlomerulonephritisMalignant hypertension |
| WBC casts | Tubulointerstitial inflammationAcute pyelonephritisTransplant rejection |
| Fatty casts | Nephrotic syndrome |
| Granular casts | Acute tubular necrosis |
| Waxy casts | End stage renal diseaseChronic renal failure |
| Eosinophilic casts | Chronic pyelonephritis |
| Hyaline casts | Normal |
| Pyuria, no casts | Acute cystitis |
| Hematuria, no casts | Kidney stonesBladder cancer |

Kidney Stone Types

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| --- | --- | --- | --- | --- |
| **Type** | **Findings** | **Crystal** | **Notes** | **Treatment** |
| Calcium phosphate | Opaque on XR/CT | **Envelope****Dumbell** | **Most common type**Prevalence: oxalate > phosphateEthylene glycol, Vit. C abuse,**Hypocitraturia**, Crohn disease(Dec. citrate absorption in gut) | Thiazides**Citrate****(chelates Ca2+)**Low sodium |
| Calcium oxalate | Opaque on XR/CT | **Wedge shaped prism** |
| AmmoniumMagnesiumPhosphate | Opaque on XR/CT | **Coffin lid** | **Caused by urease + organisms**(S. saprophyticus, Klebsiella, Proteus)Form **staghorn calculi** | **Remove infection**Remove stone |
| Uric acid | **Lucent on XR**Minimally visible on CT | **Rhomboid****Rosettes** | **Associated w/ gout**Seen w/ high cell turnover | Alkalinize urine**Allopurinol** |
| Cystine | **Lucent on XR**Sometimes visible on CT | **Hexagonal** | **Defect in PCT cysteine transporter**Stones in childhood**Sodium cyanide nitroprusside test**(rxn. turns purple) | Alkalinize urineLow sodiumChleating agents |

Renal Infections

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| --- | --- | --- | --- | --- | --- | --- |
|  | **Risk Factors** | **Presentation** | **Causes** | **Lab Findings** | **Biopsy/Imaging** | **Complications** |
| **UTI** | Female (**short urethra**)Sexual intercourseIndwelling catheter**Diabetes** | **Suprapubic pain****Dysuria**FrequencyUrgency | **E. coli**S. saprophyticusKlebsiellaProteusN. gonorrhoeaeC. trachomatis | **Leukocyte esterase +****Nitrites +** |  |  |
| **Acute Pyelo.** | Urinary obstruction**Vesicoureteral reflux**Indwelling catheterDiabetes**Pregnancy** | **Flank pain**NauseaVomiting**Chills****Fever** | **Ascending UTI**Hematogenously | WBCs in urine**WBC casts** | Neutrophil infiltrate(**spares glomeruli**)Striated parenchyma | **Chronic pyelo.****Papillary necrosis**Perinephric abscessUrosepsis |
| **Chronic Pyelo.** | **Recurring acute pyelo.**Chronic kidney stones**Vesicoureteral reflux** | **Flank pain**NauseaVomiting**Chills****Fever** | **Ascending UTI**Hematogenously | **Eosinophilic casts** | Corticomedullary scarsBlunted calyxes**Thyroidization** | **Xanthogranulomatous pyelo.**(granulomatous tissue w/ foamy macrophages) |