

RENAL CALCULI

PATHOLOGY

stones found in urinary tract & kidney

- most calculi originate in kidney
- can also be found in ureter & bladder
- some substances tend to precipitate in acid urine (uric acid), causing calculus formation. others precipitate in alkaline urine (bacteria)
- most common in white men & has high recurrence rate → typically diff dehydration, urinary retention (BPH)

FACTORS

- excess calcium (most common)
- ↑ vit D (typically made of Ca²⁺)
- ↑ protein/oxalate
- hyperparathyroidism
- altered urine pH (norm 4-8)
- ↑ uric acid
- bacteria (UTI)
- dehydration
- cystine

SIS

- pain! severe dull flank
- if stone lodges in ureter pain in abd that radiates to groin or perineum
- hematuria (RBCs)*
- pyuria (WBCs)
↳ stone moves down ureter & scrapes it
- n/v

DIAGNOSES

- KUB: x-ray of kidneys, ureter, bladder
- IVP: intravenous pyelogram
- ultrasound or CT
- urine test

TREATMENT

- meds to control pain!!!
 - * NSAIDs → ↓ pain & inflammation making stone easier to pass
 - * opioid analgesics
- strain urine: keep stones to send to lab to evaluate type of stone
- get them moving or frequently turning them
↳ push stone forward & out: ↓ risk of infection
↳ not bed rest!
↳ never massage flank pain!
- ↑ fluids so urine doesn't become conc @ night!
 - 2L/day!
- * limit protein, Na⁺, calcium, oxalate foods
 - * oxalate foods: spinach, bran, rhubarb, potato chips, nuts, butter
- most calculi are passed spontaneously but other tx available
 - ① * lithotripsy: shattering of stone with UV waves
after: ↑ fluids to remove stones
↳ normal findings: bruising & pain, blood in urine ~24 hours after procedure
↳ not normal: fever/chills - infection
 - ② * percutaneous nephrolithotomy: stone removed by incision made on back where kidneys are located
after: temporary nephrostomy tube & bag is in place → allows loose stone fragments to pass
↳ drainage tube can get clogged with stone fragments
 - maintain tube patency! (unclogged) back up
 - irrigation of nephrostomy tube w/ sterile normal saline
 - ↳ report back pain! - clogging or infection