FAST FACTS: Kidney Stones

Diagnoses: Renal Calculi; Urolithiasis; Nephrolithiasis

Causes: The high levels of certain substances in the urine such as calcium, uric acid, or the amino acid cysteine usually cause kidney stones. High levels of these substances cause crystals to separate from the urine within the urinary tract. Kidney stones may also be caused by infection or genetic disorders. Calcium stones are the most common types of stones identified and most frequently found in men over age 40. ***Within the older population, dehydration is a common cause.***

Problem: Kidney stones can be extremely painful and may become large enough to block the ureter (tube from the kidney to the bladder) and stop the flow of urine. Typically, kidney stones cause an acute onset of flank (mid back) pain not necessarily related to physical activity or can cause lower abdominal pain on the side of the stone.

Assessment

- Assess for pain focusing on abdomen, side of back, groin, and testicles.
- Stones can cause:
  - Blood tinged urine
  - Chills
  - Fever
  - Nausea and vomiting
- In severe cases, patients may experience anuria (no urine output).
- Lab assessments may include: urinalysis, calcium, phosphorus, uric acid, electrolyte levels and kidney function tests such as blood urea nitrogen and creatinine levels.
- Kidney stones may be verified by abdominal CT scan, MRI, x-ray, or ultrasound.

Interventions/Treatment

- Contact Primary Care Provider and provide measures to treat symptoms as needed (e.g. cooling measures for fever, positioning and warm compresses for pain management, etc.).
- Increase amounts of water (6-8 glasses per day) to facilitate passing of stones.
- Pain associated with passing kidney stones is often severe; individuals frequently need short term opioids to increase comfort.
- Medications, such as diuretics and sodium bicarbonate, or sodium citrate, may be prescribed to decrease stone formation and help flush stones from urinary tract.
- Lithotripsy – noninvasive focused ultrasonic energy and shock waves
- Surgery is required when stones are too large to pass on their own, are blocking urine flow or otherwise causing damage.

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References

National Institute of Diabetes and Digestive and Kidney Diseases. Kidney Stones in Adults. Urologic Diseases - NIDDK (nih.gov)

Reuben, DB, Herr, KA, Pacala, JT, et al. Geriatrics at Your Fingertips. 24th Edition. p. 204-205. New York: The American Geriatrics Society; 2022.