



PIC QUESTION OF THE WEEK: 1/05/11

Q: Identify the major types of kidney stones and is there a role for tamsulosin in their treatment?

A: Nephrolithiasis, commonly referred to as kidney stones, is a painful phenomenon that occurs in about 10% of the U.S. population and annually accounts for over \$2 billion in medical expenses. Crystals form when the urine becomes supersaturated with solutes such as calcium oxalate (accounts for ~70% of stones), calcium phosphate, cystine, magnesium ammonium phosphate (*staghorn* calculi), and uric acid. Supersaturation may develop secondary to excessive serum concentrations of various ions and other compounds, alteration in urinary pH, and bacterial infection by urea-splitting organisms. Signs and symptoms of nephrolithiasis consist of severe retrosternal pain that often radiates to the abdomen, nausea, and significant hematuria. Stones less than 5 mm in diameter typically pass spontaneously through the ureter, whereas calculi greater than 10 mm usually produce obstruction. Lithotripsy and surgical intervention are frequently required for stones that do not pass spontaneously. There are several medications that may be beneficial for the treatment of nephrolithiasis. Depending on the type of stone, prevention and/or treatment may respond to drug therapy. Thiazide diuretics and potassium citrate are often used in managing calcium stones while allopurinol has been the standard for preventing uric acid calculi. During the past few years, several studies have supported the use of the alpha-adrenergic blocker tamsulosin and calcium channel blockers such as nifedipine for reducing pain and the need for analgesics as well as stimulating expulsion of kidney stones (4 – 10 mm in diameter) in both men and women. In many cases, these drugs are used in combination with corticosteroids and antibiotics. It is thought that tamsulosin reduces pain and the time for spontaneous stone expulsion by inhibiting basal tone, peristaltic frequency, and ureteral contractions. The most commonly administered dose of tamsulosin for this indication (*unlabeled*) is 0.4 mg daily. In one recently published trial, 100 patients with ureteral stones (5 – 10 mm in diameter) were treated with tamsulosin (0.4 mg daily) or placebo. Stones were expelled in 82% of the tamsulosin group and 62% receiving placebo. The average time to passage of the stones and need for analgesia was also less in those treated with tamsulosin. Dizziness and orthostatic hypotension are frequently reported with this type of therapy. Tamsulosin also improves the passage of stones after laser lithotripsy. Nephrolithiasis is a costly and painful condition whose treatment may be improved with drugs such as tamsulosin.

References

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