

Medical management of renal stones

More than analgesia?

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Clinical question

In patients with renal stones eligible for observation, does medical expulsion therapy (MET) improve passage of stones and other clinically relevant outcomes?

Evidence

- Meta-analysis¹ of 33 trials (3105 patients) examined α -blockers (most often tamsulosin) or calcium channel blockers (nifedipine) in patients with renal stones (primarily <10 mm; frequently distal ureter).
 - Stone expulsion is significantly ($P<.001$) better with MET than with placebo (80% vs 54%); absolute benefit (AB) of 26%; number needed to treat (NNT) of 4.
 - MET also reduced time to expulsion, need for analgesia, pain scores, and hospitalization rates.
 - Stone size affects the success of MET. Smaller and more distal stones are more likely to pass spontaneously and are therefore less likely to benefit from MET.
 - Absolute benefit for stones ≥ 5 mm is twice that for those <5mm (31% vs 15%).
 - Patients having extracorporeal shock wave lithotripsy also benefit from MET (AB=21.6%; NNT=4.6).
- Two previous meta-analyses^{2,3} found similar benefits.
- Adverse events: MET is generally well tolerated.³
 - Calcium channel blockers had more adverse events overall (15.2% vs 4%; mostly gastrointestinal upset) and more discontinuation (2.9% vs 0.2%).
 - These data were poorly reported and not compared statistically.

Context

- European⁴ and US⁵ guidelines for urolithiasis recommend MET as an option when the following are met:
 - newly diagnosed ureteral stone <10 mm in patients without need for urgent urologic intervention; and
 - well-controlled pain, not septic, good renal function, and followed with periodic imaging to monitor stone position and assess hydronephrosis.
- Two recent well-done trials^{6,7} did not find a difference with MET for stone expulsion. However,
 - stone size in the studies was small (mean ≤ 4 mm) and most patients would pass these without MET^{6,7}; and
 - in these studies, α -blockers still reduced time to stone passage,⁶ pain scores,⁶ and need for analgesia.⁷

Bottom line

The current evidence indicates that patients with renal stones <10 mm, who are eligible for observation,

can be offered α -blockers or nifedipine to increase the chance of stone expulsion, decrease pain, and decrease the time to stone expulsion.

Implementation

Medical expulsion therapy can improve patient outcomes and decrease costs of treating renal calculi, but it is used infrequently.⁸ Preprinted orders seem to improve outcomes for various conditions seen in the emergency department (ED).^{9,10} Eligible patients might benefit if orders used in the ED for renal colic included a check-box to encourage discussion of MET. If missed in the ED, family physicians could prescribe MET for appropriate patients after discharge. Based on dosing from trials,² prescriptions could be 0.4 mg of tamsulosin, 5 mg of terazosin, 4 mg of doxazosin, or 30 mg of nifedipine sustained release, once a day until the stone is passed or for a maximum of 4 weeks.

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