Maine Medical Center
Department of Emergency Medicine

Journal Club / Research Article Summary

Date: 10/23/13
 Presenter: Andrew Kleaveland

ARTICLE:
- Citation: J. Kellogg Parsons, Lori Ann Hergan, Kyoko Sakamoto and Charles Lakin. Efficacy of Alpha Blockers for the treatment of Ureteral Stones
- Country: United States
- Funding Sources: Financial interest/relationship Francis Taylor Publishing

PURPOSE:
- Research Question(s): Determine if alpha blocker therapy promotes expulsion of ureteral stones
  - Hypothesis: None

DESIGN:
- Study Design: Review / Meta analysis.
  - Outcomes: Primary outcome evaluated overall ureteral stone expulsion rate for distal ureteral stones

SUBJECTS:
- Subjects:
  - Number of Studies / Subjects: 11 studies included 911 subjects
  - Inclusion / Exclusion criteria:
    - Randomized controlled clinical trial
    - Studies had to include stone expulsion as primary or secondary outcome
    - Use of alpha blocker therapy arm and use of conservative treatment in control arm
    - All included stones/stone fragments in distal portion of ureter
    - Stone size ranged 3-15 mm
○ Exclusion criteria
  ● Use of a non-alpha blocker stone expulsive
  ● Solitary kidney, concomitant infection, refractory pain, multiple stones, severe hydronephrosis, pregnancy, acute/chronic renal failure, history of urinary tract surgery, endoscopy or strictures and history of previous spontaneous stone expulsion

○ Demographics: None specified. Pt’s with renal colic

METHODS:
● Interventions: Any type of alpha blocker

● Study Groups:
  ○ Control arm: managed with fluid intake and pain control and wide range of other conservative medications
  ○ Alpha blocker group: ten studies used tamsulosin 0.4 mg, two studies with terazosin, one study with doxazosin

● DATA ANALYSIS:
  ● Statistics Used:
    ○ DerSimonian & Laird random effects models
    ○ Risk Ratio
    ○ Chi-square heterogeneity
    ○ Begg’s test & Egger’s test, Funnel plot
    ○ Subgroup analyses

● What, if any, confounding variables were controlled for / adjusted for:
  ○ Evaluated for sources of heterogeneity between studies included in meta-analysis. Performed subgroup analysis excluding study with the most influence and studies that used stone size, corticosteroids, shock wave lithotropsy
  ○ evaluated for publication bias with funnel plot and Begg’s & Egger’s tests

RESULTS:
● Brief answers to research questions:
  ○ Alpha blocker therapy is associated with significantly increased rates of distal ureteral stone expulsion compared to conservative therapy
  ○ NNT 4
○ Alpha blocker treatment 44% more likely to expel stones; RR 1.44, CI 95%
○ Treatment time ranged from 8 days to 6 weeks. 5 studies used 2 weeks as the end point for spontaneous stone passage

IMPLICATIONS FOR PRACTICE:
● Applicable to this clinical practice: Yes
● Feasibility (cost, resources, etc): Low cost, tamsulosin widely available, safe
● Clinically Relevant: relevant to ED patients presenting with renal colic.
  ○ Does not address specifics of variables which are most likely to benefit from alpha blockers; i.e. variables stone size, location, duration of colic
  ○ Difficult to interpret the quality of studies used in the meta-analysis, but questions are raised. No sample sizes included, huge variability in follow up times, funnel plot showed publication bias show authors used two other tests to justify there was no publication bias present. All studies included failed to adhere to CONSORT criteria.

LEVEL OF EVIDENCE / DECISION FOR USE:
● Study supports already widely used therapy of alpha blockers for routine treatment for ureteral stones
● Level of Evidence:
  Ia Evidence obtained from meta-analysis of randomized controlled trials