Chart reviews!

5/24/23

CLAIRE CIARKOWSKI AND HANNAH IMLAY

Patient Demographics
18 patients

- Age Range: 20-89
  - Mean Age 64
- Sex:
  - Female: 11
  - Male: 7
- Encounter Type
  - ED then Discharge: 11
  - ED than admitted: 6
  - Inpatient: 1

- Ethnicity
  - Hispanic/ LantinX: 2
  - Not Hispanic: 11
  - Unknown: 5
- Race:
  - White: 10
  - Unknown: 4
  - American Indian: 2
  - Alaska Native: 1

- Comorbidities:
  - None: 14
  - Dementia: 2
  - Diabetes: 3
  - Immune suppression: 1
- Urologic comorbidities
  - None: 14
  - Chronic Foley: 5
  - Neurogenic bladder: 4

Provider demographics

18 providers

- Gender
  - 3 females
  - 15 males

- Degree
  - 2 DO
  - 12 MD
  - 3 PA
  - 1 NP

- Specialty
  - 4 Family Medicine
  - 14 Emergency Medicine

Case demographics

18 cases reviewed from 9 hospitals

- NQF Definition
  - 4 ASB, 14 UTI
- Hannah/Claire clinical opinion
  - 9 ASB, 9 UTI
    - 5 cases defined as UTI by NQF and we defined as ASB

NQF definition of UTI

- Urgency
- Rigors
- Frequency
- Dysuria
- Suprapubic pain or tenderness
- Acute hematuria
- Costovertebral or flank pain or tenderness
- Documentation of pyelonephritis
- Fever (>38 C)
- New onset mental status changes WITH systemic signs of infection

Reasons urinalysis was sent

- Urinary symptoms
  - Urinary frequency
  - Urinary retention
  - Bladder pain/tenderness
  - Flank pain
- Fevers/sepsis eval
- Altered mental status
- Blocked catheter

Why did we disagree with the NQF definition so often?

- Flu A positive
- Stroke
- Altered mental status with "this is how she is with a UTI"
- Urinary retention for alterative reasons
- Blocked foley with chronic colonization

Take home points

- NQF definition undercounts ASB so what we're showing you is both the tip of the iceberg and probably the lowest hanging fruit
- Remind clinicians that UTI symptoms with alternative causes should not be a reason to treat for UTI
  - we can't identify this via NQF but its helpful to include with patient education
- Keep up the great work sending us cases

Urinary retention

Case presentation

- 71 yo M with history of BPH, diabetes, and previous CVA presents with increasing confusion and inability to urinate. In the ED, he is found to have evidence of urinary retention on bladder scan. Foley is inserted and UA is sent. UA returns with 5-10 RBC, 10-25 WBC, and 1+ bacteria. Labs and VS are stable/unremarkable. He is given 1gm of IV ceftriaxone and admitted. Within 2 hours, his mentation is improving.

Poll Question #1

Which of the following groups is most likely to have urinary retention:

a. Males
b. Females
c. Both equally likely

Urinary retention

- Common in men >60
  - Incidence: 3.0 to 6.8 cases per 1000 person-years
    - Estimated 10% of men older than 70
    - 30% in men >80
- Rare in women

https://doi.org/10.1016/j.emc.2019.07.005

TABLE 1

Selected Causes of Urinary Retention

Cause	Men	Women	Both
Obstructive	Benign prostatic hyperplasia; meatal stenosis; paraphimosis; phimosis; prostate cancer	Organ prolapse (cystocele, rectocele, uterine prolapse); pelvic mass (gynecologic malignancy, uterine fibroid, ovarian cyst); retroverted impacted gravid uterus	Bladder calculi; bladder neoplasm; fecal impaction; gastrointestinal or retroperitoneal malignancy/mass; urethral strictures, foreign bodies, and stones
Infectious and inflammatory	Balanitis; prostatic abscess; prostatitis; posthitis	Acute vulvovaginitis; Behçet syndrome; vaginal lichen planus; vaginal lichen sclerosus; vaginal pemphigus	Aneurysmal dilation; bilharziasis (schistosomiasis); cystitis; echinococcosis; edema; Guillain-Barré syndrome; herpes simplex virus; Lyme disease; periurethral abscess; transverse myelitis; tubercular cystitis; urethritis; varicella-zoster virus
Iatrogenic/other	Fracture; laceration; penile constricting bands; penile trauma	Postpartum complication; urethral sphincter dysfunction (Fowler syndrome)	Disruption of posterior urethra and bladder neck in pelvic trauma; pharmacologic; postoperative complication; psychogenic

Note: For specific pharmacologic and neurologic causes of urinary retention, see Tables 2 and 3, respectively.

Adapted with permission from Selius BA, Subedi R. Urinary retention in adults: diagnosis and initial management. Am Fam Physician. *2008;77(5):644.*

Serlin DC, Heidelbaugh JJ, Stoffel JT. Urinary Retention in Adults: Evaluation and Initial Management. Am Fam Physician. 2018 Oct 15;98(8):496-503. PMID: 30277739.

TABLE 2

Selected Pharmacologic Agents Associated with Urinary Retention

Class	Drugs
Antiarrhythmics	Disopyramide (Norpace), procainamide, quinidine
Anticholinergics (selected)	Atropine, belladonna alkaloids, dicyclomine, flavoxate, glycopyrrolate (Robinul), hyoscyamine (Levsin), oxybutynin, propantheline, scopolamine
Antidepressants	Amitriptyline, amoxapine, doxepin, imipramine, maprotiline, nortriptyline (Pamelor)
Antihistamines (selected)	Brompheniramine, chlorpheniramine, cyproheptadine, diphenhydramine (Benadryl), hydroxyzine
Antihypertensives	Hydralazine, nifedipine
Antiparkinsonian agents	Amantadine, benztropine, bromocriptine (Parlodel), levodopa,* trihexyphenidyl
Antipsychotics	Chlorpromazine, fluphenazine, haloperidol, prochlorperazine, thioridazine, thiothixene
Hormonal agents	Estrogen, progesterone, testosterone
Muscle relaxants	Baclofen (Lioresal), cyclobenzaprine (Flexeril), diazepam (Valium)
Sympathomimetics (alpha-adrenergic agonists)	Ephedrine, phenylephrine, pseudoephedrine
Sympathomimetics (beta-adrenergic agents)	Isoproterenol, metaproterenol, terbutaline
Miscellaneous	Amphetamines, carbamazepine (Tegretol), dopamine, mercurial diuretics, nonsteroidal anti-inflammatory drugs (e.g., indomethacin), opioid analgesics (e.g., morphine), vincristine

*Levodopa is available only in combination drug products (e.g., carbidopa/levodopa [Sinemet]).

Adapted with permission from Curtis LA, Dolan TS, Cespedes RD. Acute urinary retention and urinary incontinence. Emerg Med Clin North Am. *2001;19(3):600.*

So Many Drugs!

Serlin DC, Heidelbaugh JJ, Stoffel JT. Urinary Retention in Adults: Evaluation and Initial Management. Am Fam Physician. 2018 Oct 15;98(8):496-503. PMID: 30277739.

TABLE 3

Neurologic Causes of Urinary Retention and Voiding Dysfunction

Lesion type	Causes
Autonomic or peripheral nerve	Autonomic neuropathy, diabetes mellitus, Guillain-Barré syndrome, herpes zoster virus, Lyme disease, pelvic fracture, pernicious anemia, poliomyelitis, radical pelvic surgery, sacral agenesis, spinal cord trauma, tabes dorsalis
Brain	Cerebrovascular disease, concussion, multiple sclerosis, neoplasm or tumor, normal pressure hydrocephalus, Parkinson disease, Shy-Drager syndrome
Spinal cord	Dysraphic lesions, intervertebral disk disease, meningomyelocele, multiple sclerosis, spina bifida occulta, spinal cord hematoma or abscess, spinal cord trauma, spinal stenosis, spinovascular disease, transverse myelitis, tumors or masses of conus medullaris or cauda equina

Adapted with permission from Ellerkmann RM, McBride A. Management of obstructive voiding dysfunction. Drugs Today (Barc). *2003; 39(7):515.*

Serlin DC, Heidelbaugh JJ, Stoffel JT. Urinary Retention in Adults: Evaluation and Initial Management. Am Fam Physician. 2018 Oct 15;98(8):496-503. PMID: 30277739.

Poll Question #2

Urinary retention without infection can lead to altered mental status

A. True

B. False

Cystocerebral Syndrome

- Cystocerebral syndrome: encephalopathy or delirious state with features of
  - agitation, paranoia, confusion, decreased responsiveness
    - AND
  - bladder distention
- Who does this happen to?
  - Men older than 70 years
  - benign prostatic hypertrophy (BPH)
  - acute episodes of delirium that rapidly responded to bladder decompression

Thelmo FL Jr, et al. Cystocerebral Syndrome: An Updated Review and a New Proposed Mechanism for an Often Forgotten Cause of Delirium. Cureus. 2020 Oct 19;12(10):e11034. doi: 10.7759/cureus.11034. PMID: 33214961; PMCID: PMC7673271.

Cystocerebral Syndrome: Proposed Mechanism

- Acute metabolic encephalopathy from excessive sympathetic drive
- Bladder distention ->
  - Detrusor muscles relax to accommodate excess urine ->
  - Upregulation of peripheral receptor β-activation from the sympathetic nervous system ->
  - Increased catecholamine surge ->
  - Encephalopathy

- Increased rates of bacterial colonization in the elderly can contribute to small amounts of inflammation of the bladder wall leading to further release of stress hormones as the amount of time the urine spends in the bladder is increased

Thelmo FL Jr, et al. Cystocerebral Syndrome: An Updated Review and a New Proposed Mechanism for an Often Forgotten Cause of Delirium. Cureus. 2020 Oct 19;12(10):e11034. doi: 10.7759/cureus.11034. PMID: 33214961; PMCID: PMC7673271.

Poll Question #3

Acute urinary retention can cause cognitive impairment in otherwise young healthy people

A. True

B. False

The Effect of Acute Increase in Urge to Void on Cognitive Function in Healthy Adults

- Methods
  - Healthy adults (n = 8) drank 250ml of water every 15 minutes
  - They performed computer tests of psychomotor function, visual attention, and working memory
  - They peed when they couldn't hold it anymore

Lewis MS, et al. *Neurourology Urodynamics.*2011;30:183.

The Effect of Acute Increase in Urge to Void on Cognitive Function in Healthy Adults

- Results
  - Extreme urge to void had a large negative effect on attentional and working memory
  - The decline was similar to a blood alcohol concentration of 0.05%
  - Cognitive functions returned to normal after peeing

Lewis MS, et al. *Neurourology Urodynamics.*2011;30:183.

Urinary retention management

- Foley catheter
  - Short term: 1-2 weeks
  - Reassess as outpatient with voiding trial
  - Consider clean intermittent catheterization if fail voiding trial
  - Refer to Urology
- Medications
  - Tamsulosin
  - Finasteride
- Other causes?

Next round of cases

- One more round of case submissions!
  - You will get case IDs by next week
  - Due **June 14th**

- Please send cases to Claire
  - Claire.ciarkowski@hsc.Utah.edu
  - Fax: 801-585-9166