

FAST FACTS AND CONCEPTS #287

DRUG-INDUCED ACUTE URINARY RETENTION

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Background Acute urinary retention (AUR) is defined as a sudden inability to urinate, which is usually painful and requires catheterization (1). This can impair quality of life, and can cause kidney injury (2). A variety of medications used for symptom management can contribute to urinary retention. This *Fast Fact* will review medication-induced AUR and offer management strategies.

Clinical features and evaluation Signs and symptoms of AUR include bladder/suprapubic pain and tenderness and new onset overflow incontinence. The presence of AUR should be assessed in older patients who develop delirium, particularly if they have underlying dementia. Medications are a common cause of AUR. Common non-drug etiologies include benign prostatic hypertrophy, malignancy (e.g., epidural spinal cord compression), neurogenic bladder, and fecal impaction. There are little data on the incidence of AUR in palliative care. However, a small observational study showed that 15% of patients admitted to a large palliative care program had urinary retention (3). In contrast to AUR, chronic urinary retention is difficult to define as urine volumes vary greatly between patients. Chronic urinary retention is often the result of chronic neurologic condition or benign prostatic hypertrophy. A key difference between acute and chronic urinary retention is that chronic urinary retention is often asymptomatic and rarely painful due to gradual distention of the bladder over time. Common symptoms of chronic urinary retention include frequency, hesitancy and decreased force of urine stream (4).

Medications Associated with AUR Medications with anticholinergic properties (e.g., antipsychotics antihistamines and many anti-emetics and antidepressants) as well as opioids and anesthetics are commonly associated with AUR. Other drugs include alpha-agonists, benzodiazepines, NSAIDs, detrusor relaxants (e.g., oxybutynin), and calcium channel antagonists. Elderly patients are more at risk due to increased prevalence of benign prostatic hypertrophy (BPH) and polypharmacy.

- Selective serotonin reuptake inhibitors (SSRI's) are an under-recognized cause of retention. One prospective study found that urinary retention occurred in about 10% of patients prescribed SSRI's and the symptom often leads to the discontinuation of the medication (5).
- Opioids causing urinary retention has long been recognized, and is most studied in post-operative adult patients where its incidence is approximately 25% (6). All opioids can cause urinary retention due to mu-opioid receptor agonism.

Post Void Residual is the volume of urine left in the bladder at the end of micturition. The gold standard for PVR measurement is a transurethral catheterization; however due to the discomfort involved, non-invasive bladder volume estimation via a portable bladder scanner is a commonly utilized alternative often performed by the bedside nurse. Threshold values delineating what constitutes an abnormal PVR are poorly understood and PVR measurements utilizing portable scanners can be inaccurate in the presence of ascites (7). In general, clinical management decisions should be based on the patient's symptoms and the trends in the PVR measurements rather than a strict threshold PVR measurement. For example, an acute increase in PVR values from 200 mL to 450 mL in the setting of acute onset suprapubic pain or discomfort is indicative of AUR, whereas an asymptomatic patient with a PVR of 300 mL may not need any intervention at all.

Physical Exam A distended bladder is palpable as a tender suprapubic mass once it has reached a urine volume of 150 mL. Bladders with volumes in excess of 500 mL can manifest as a visible suprapubic mass in thin patients. Because a normal bladder volume is less than 50 mL, AUR can be missed on physical exam, particularly in obese patients.

Clinical Management AUR can be a medical emergency; hence, such patients should be catheterized to relieve bladder distension. Depending on the age of the patient, patients should be treated with either in-and-out catheterization followed by a trial of spontaneous voiding or be sent home with an indwelling bladder catheter for several days to a week. Patients older than 75 years and those with PVRs greater than 1000 mL are less likely to have successful voiding after a one-time catheterization. Medications should be reviewed and offending agents should be stopped or dose-limited. If BPH is a contributing factor, the addition of BPH drugs, such as 5- α reductase inhibitors and α -antagonists, can help improve urine flow (6). If a spontaneous voiding trial fails after adjustment of medication and several days of catheterization, a referral to urology is warranted (8).

For patients with a limited life expectancy for whom causative medications cannot be adjusted, life-long indwelling catheterization or intermittent catheterization are reasonable options. Although many clinicians may consider catheterization to be burdensome, a survey of patients with neurogenic bladders using long-term indwelling or intermittent self-catheterization found that the majority of patients felt that the use of catheterization positively impacted quality of life (9).

Novel Pharmacologic Management Strategies If the offending pharmacotherapy cannot be stopped, targeted pharmacotherapies may be able to counteract urinary retention, although such use is considered investigational. Opioid antagonists such as naloxone and methylnaltrexone can block opioid receptors and allow for normal urination per a case report and a single, pre-clinical controlled trial (10,11). One case report described the reversal of citalopram-related AUR by the addition of mirtazapine (12).

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