



## Acute urinary retention evaluated with urodynamic assessment in elder male

W23, 16 October 2012 09:00 - 10:30

Start	End	Topic	Speakers
09:00	09:05	Introduction	<ul style="list-style-type: none"> <li>Jianquan Hou</li> </ul>
09:05	09:20	Acute urinary retention and elder male	<ul style="list-style-type: none"> <li>Weiguo Chen</li> </ul>
09:20	09:35	Urodynamic assessment for elder male patients with acute urinary retention	<ul style="list-style-type: none"> <li>Yufen Jiang</li> </ul>
09:35	09:55	Discussion	All
09:55	10:10	Factors involving in the recovery of bladder function after acute urinary retention	<ul style="list-style-type: none"> <li>Weiguo Chen</li> </ul>
10:10	10:30	Hands on Training	All

### **Aims of course/workshop**

For elder male patients with acute urinary retention, it is difficult to make sure how long the catheterization should be kept. Pressure-flow examination is always used to evaluate the extent of bladder outlet obstruction and bladder dysfunction, but the time to do such a study is conflicting. In our study, we try to solve those problems by analysing retrospectively the results of urodynamic examination on elder male patients with acute urinary retention.

### **Educational Objectives**

Elder male patients with acute urinary retention should receive indwelling catheterization to avoid further deterioration of the bladder function, especially detrusor contractility. Catheterization may be useful in ensuring recovery of bladder function after CUR and before a delayed TURP. Urodynamics after episodes of acute urinary retention can be used to predict the therapeutic outcome. Pressure-flow studies should be optional in patients with AUR who are younger than average 65.1 years, as most would void; however, we recommend late (4 weeks after catheterization) pressure-flow studies in men with AUR who are older than 75 years, or have significant comorbid conditions. Detrusor overactivity in association with good voiding and end-filling pressures is a positive prognostic sign for patients with acute urinary retention. The poor response of patients with low pressure filling was a result of the high incidence of inadequate detrusor contraction, leading to a recurrent acute urinary retention or a persistent retention.

## LUTS in Men

16 October 2012 9:00 - 10:30

### Aims of workshop

For elder male patients with acute urinary retention, it is difficult to make sure how long the catheterization should be kept. Pressure-flow examination is always used to evaluate the extent of bladder outlet obstruction and bladder dysfunction, but the time to do such a study is conflicting. In our study, we try to solve those problems by analysing retrospectively the results of urodynamic examination on elder male patients with acute urinary retention.

### Educational objectives

Elder male patients with acute urinary retention should receive indwelling catheterization to avoid further deterioration of the bladder function, especially detrusor contractility. Catheterization may be useful in ensuring recovery of bladder function after CUR and before a delayed TURP. Urodynamics after episodes of acute urinary retention can be used to predict the therapeutic outcome. Pressure-flow studies should be optional in patients with AUR who are younger than average 65.1 years, as most would void; however, we recommend late (4 weeks after catheterization) pressure-flow studies in men with AUR who are older than 75 years, or have significant comorbid conditions. Detrusor overactivity in association with good voiding and end-filling pressures is a positive prognostic sign for patients with acute urinary retention. The poor response of patients with low pressure filling was a result of the high incidence of inadequate detrusor contraction, leading to a recurrent acute urinary retention or a persistent retention.

Handout of “Acute urinary retention evaluated with urodynamic assessment in elder male”

### **1. What is the acute urinary retention?**

Acute urinary retention refers to the sudden inability to pass urine. It will often be unexpected, usually inconvenient, and always painful. If a man lives long enough his risk of having an episode of acute urinary retention is remarkably high. Over 1 in 10 men in their 70s will experience acute urinary retention within the next five years. 1 The risk for men in their 80s is nearly 1 in 3.

### **2. Why should we pay more attention on acute urinary retention in elder people?**

Few data are available on mortality in patients with acute urinary retention. A retrospective cohort study by Armitage and colleagues is to study long term mortality in men admitted to hospital for a first episode of acute urinary retention. The authors found that mortality was high — one in seven men with spontaneous acute urinary retention and one in four men with precipitated acute urinary retention died in the first year. The risk of dying increased with age and comorbidity. In the first year after hospital admission, 16% of men with precipitated acute urinary retention and no comorbidity died compared with 38% of similar men who also had comorbidity.

Benign prostatic hyperplasia has been associated with comorbidities such as diabetes mellitus, hypertension, and the metabolic syndrome. Because mortality was highest in the presence of comorbid conditions, people presenting with acute urinary retention should be given a urological examination and a multidisciplinary review to identify and treat comorbidity early.

### **3. Why does acute urinary retention happen?**

We are still not sure what causes acute urinary retention. There are several possible causes of AUR: ① a greater resistance to the flow of urine, either related to mechanical obstruction (e.g. benign prostate hyperplasia, urethral stricture) or dynamic obstruction (e.g. increased  $\alpha$ -adrenergic activity); ② bladder over-distension (e.g. immobility, constipation, prolonged car travelling) which may be secondary to the influence of drugs (e.g. anticholinergic medication inhibiting bladder contractility, opiates or opioids as a result of decreased bladder fullness); and ③ neuropathic causes (e.g. diabetic cystopathy).

### **4. Causes of Urinary Retention**

Although classification systems vary, causes of urinary retention can be categorized as obstructive, infectious and inflammatory, pharmacologic, neurologic, or other.

	<b>Causes</b>
Obstructive	Benign prostatic hyperplasia; meatal stenosis; paraphimosis; penile constricting bands; phimosis; prostate cancer Aneurysmal dilation; bladder calculi; bladder neoplasm; fecal impaction; gastrointestinal or retroperitoneal malignancy/mass; urethral strictures, foreign bodies, stones, edema
Infectious and inflammatory	Balanitis; prostatic abscess; prostatitis Bilharziasis; cystitis; echinococcosis; Guillain-Barré syndrome; herpes simplex virus; Lyme disease; periurethral abscess; transverses myelitis; tubercular cystitis; urethritis; varicella-zoster virus
Other	Penile trauma, fracture, or laceration Disruption of posterior urethra and bladder neck in pelvic trauma; postoperative complication; psychogenic

### 5. Diagnostic Testing in Patients with Urinary Retention

<i>Test type</i>	<i>Diagnostic test</i>	<i>Rationale</i>
Laboratory	Urinalysis	Evaluate for infection, hematuria, proteinuria, glucosuria
	Serum blood urea nitrogen, creatinine, electrolytes	Evaluate for renal failure from lower urinary tract obstruction
	Serum blood glucose	Evaluate for undiagnosed or uncontrolled diabetes mellitus in neurogenic bladder
	Prostate-specific antigen	Elevated in prostate cancer; may be elevated in benign prostatic hyperplasia, prostatitis, and in the setting of acute urinary retention
Imaging studies	Renal and bladder ultrasonography	Measure postvoid residual urine; evaluate for bladder and urethral stones, hydronephrosis, and upper urinary tract disease
	Pelvic ultrasonography; CT of abdomen and pelvis	Evaluate for suspected pelvic, abdominal, or retroperitoneal mass or malignancy causing extrinsic bladder neck compression
	MRI or CT of brain	Evaluate for intracranial lesion, including tumor, stroke, multiple sclerosis (MRI preferred in multiple sclerosis)
	MRI of spine	Evaluate for lumbosacral disk herniation, cauda equina syndrome, spinal tumors, spinal cord compression, multiple sclerosis
Other	Cystoscopy, retrograde cystourethrography	Evaluate for suspected bladder tumor and bladder or urethral stones or strictures
	Urodynamic studies (e.g., uroflowmetry, cystometry,	Evaluate bladder function (detrusor muscle and sphincter) in patients with neurogenic bladder to help

	electromyography, urethral pressure profile, video urodynamics, pressure flow studies of micturition)	guide management
--	---	------------------

**6. Who is at high risk to have acute urinary retention in elder male population?**

Baseline variables such as age, severe LUTS, low peak urinary flow rate, increased postvoid residual urine volume (PVR), enlarged prostate and high serum PSA levels have been identified as predictors of acute urinary retention for elder male.

Acute urinary retention in men less than 60 years old was rare. However, in the older age groups the risk increased with age. Men aged 70-79 years had a 1 in 10 chance of developing acute urinary retention in the subsequent five years. If they reported urinary symptoms, the risk was greater. Three other factors increased the risk of acute urinary retention: a large prostate; low peak urine flow rate; and abnormally high concentration of serum prostate specific antigen. In the placebo arm of a large pharmaceutical study of men with enlarged prostates and lower urinary tract symptoms, prostate specific antigen was the strongest predictor of both acute urinary retention and the need for prostatic surgery.

**7. Which factors is more useful to predict acute urinary retention?**

There is increasing evidence that dynamic variables (symptom and postvoid residual urine volume worsening) serve as good predictors of acute urinary retention in men with LUTS suggestive of BPH. Firstline treatment with alfuzosin might thus help to select patients at risk of BPH progression, to optimize their management.

**8. Urodynamic examination for acute urinary retention.**

Urodynamics are now widely accepted as the reference standard to determine the grade of bladder outlet obstruction (BOO) and to assess detrusor contractility function. However, the urodynamic features that characterize lower urinary tract function under conditions of urinary retention have not been well studied. It also has been difficult to

establish an explicit connection between AUR treatment outcome and urodynamic findings. Thus, the role of urodynamic evaluation in elderly men with AUR is still equivocal.

### **9. Which time to carry out urodynamic examination for elder male with acute urinary retention?**

The optimum timing of pressure-flow studies after acute retention is controversial, as an acutely decompensated detrusor may not regain its initial function for a variable period. In our study, pressure-flow studies were undertaken at a median of 28 days (namely 4 weeks) after the retention episode. We presume this would have given enough time for the decompensated detrusor to regain its initial tone and function.

In our study the treatment failed in all patients aged >75 years; pressure-flow studies should be optional in patients with acute urinary retention who are younger than 65 years, as most would void. We recommend late (at least 4 weeks after catheterization) pressure-flow studies in men with acute retention who are older than 75 years, or have some complications (e.g. Diabetes).

### **10. Trial without catheterization (TWOC) for elder male with acute urinary retention.**

In our study, a total of 103 men with a mean age of  $68.5 \pm 9.5$  years presenting to our institution with acute urinary retention received TWOC and urodynamice assessment. prospectively. After having indwelling catheter for 1 week, 51 cases (49.5%) obtain successful TWOC whereas 52 cases (50.5%) did not. As shown in table 1, the first sensation, cystometry capacity and bladder compliance were significantly lower in patients with TWOC success than those with unsuccessful TWOC. While detrusor instability extent, bladder contraction index, detrusor pressure at maximum flow rate and BOO grade were significantly higher in patients with successful TWOC than those with unsuccessful TWOC.

Table 1. comparison of Urodynamic parameters of TWOC success group and TWOC failure group.

	successful TWOC	unsuccessful TWOC
First sensation	86.6±23.7	245.1±113.4 <sup>‡</sup>
Cystometry capacity	189.3±56.7	397.5±168.9
Compliance (mL·kPa <sup>-1</sup> )	268.26±287.86	474.89±575.41 <sup>†</sup>
DI* extent (kPa)	3.65±0.70	0.81±0.45 <sup>†</sup>
P <sub>det(Qmax)</sub> <sup>※</sup> (kPa)	9.31±3.70	2.70±1.13 <sup>†</sup>
Q <sub>max</sub> <sup>¶</sup> (mL/s)	8.36±6.64	6.58±4.84
BCI <sup>#</sup>	119.4±33.6	53.1±14.3 <sup>†</sup>
BOO <sup>§</sup> grade	4.09±1.43	0.89±0.47 <sup>†</sup>

\* DI: detrusor instability

※ P<sub>det(Qmax)</sub>: detrusor pressure at maximum flow rate

¶ Q<sub>max</sub>: maximum flow rate

# BCI: bladder contraction index (BCI= P<sub>det(Qmax)</sub>+5Q<sub>max</sub>)

§BOO: bladder outlet obstruction

compared with the successful TWOC group, †:P<0.01; ‡:P<0.05

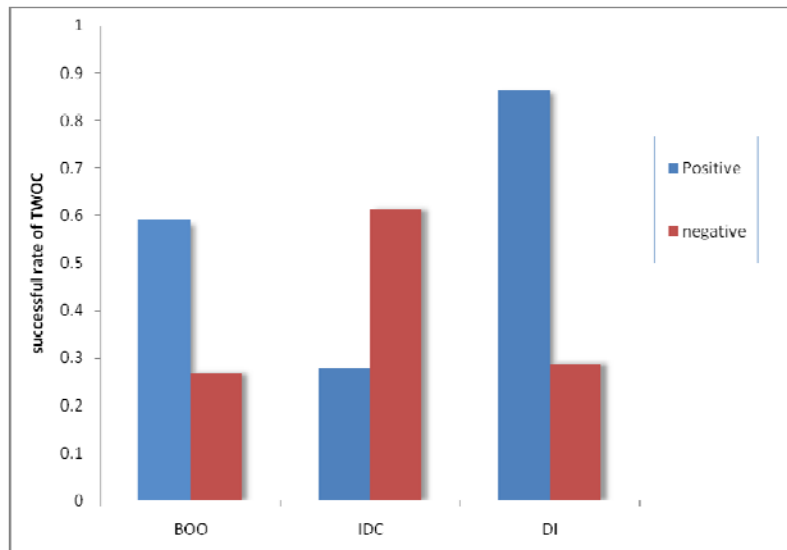
## 11. Which factors predict successful TWOC?

Various factors predicting successful TWOC have previously been evaluated, including lower urinary tract symptoms, prostate size and post-catheterization residual (PVR) urine. However the role of urodynamic studies in predicting the treatment outcome has not yet been fully clarified. In the current study, Urodynamic characters (figure 1) associated with an unsuccessful TWOC are presenting IDC without BOO, absence of detrusor instability or diminished compliance. Poor detrusor contractility represents a risk factor of both surgical and conservative therapy failure. Our results demonstrated that successful rate of TWOC was 2.1 times lower of AUR patients with IDC compared with those with BOO. Meanwhile, bladder instability was significantly more common in patients with successful TWOC than in those with failure TWOC. Successful rate of TWOC was 3.0 times higher of AUR patients with DI compared with those without DI. These finding may be interpreted by the mechanism of the



compensation phase and the following by decompensation phase of detrusor contractility as a response to initial outlet obstruction.

Figure 1. Comparison of success rate for TWOC in patients with and without BOO, IDC and detrusor instability.



BOO: bladder outlet obstruction. IDC: impaired detrusor contraction. DI: detrusor instability.

## 12. How to prevent acute urinary retention in elder male?

Acute urinary retention can be prevented. Men randomised to finasteride, a drug which reduces the size of the prostate by inhibiting the formation of dihydrotestosterone from testosterone, had a 57% lower risk of acute urinary retention over four years compared with men receiving placebo. Because acute urinary retention was a relatively infrequent event in this group, the reduction in absolute risk was 7% (placebo) to 3% (finasteride). Interestingly, men taking finasteride who had no obvious cause for their acute urinary retention were less likely to require prostatectomy than men receiving placebo (33% v 72%).



## Notes

Record your notes from the workshop here