PREDICTIVE VARIABLES OF SPONTANEOUS MICTURITION RECOVERY AFTER ACUTE URINARY RETENTION: AN OBSERVATIONAL PROSPECTIVE STUDY

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Hypothesis / aims of study

Acute urinary retention (AUR) is the sudden inability to urinate spontaneously despite having a distended bladder, and it is often accompanied by pain. It represents one of most significant and painful events in the natural history of benign prostatic hyperplasia (BPH). The management of AUR is basically an emergency management. The most appropriate instrument is undoubtedly the placement of a bladder transurethral catheter. Following catheterization the therapy to be adopted is uncertain, but there seems to be a benefit to alpha blockers (1). While the factors predicting the risk of AUR in patients with BPH are known and have been showed in long term observational studies (2), the factors able to predict which patients, after an episode of AUR will have a recovery of spontaneous micturition or a new AUR episode, are not well known. The aim of our study was to evaluate the factors and the variables that can predict which patients will have a recovery of spontaneous urination after removal of the catheter in contrast to those patients that will need an indwelling catheter.

Study design, materials and methods

The current prospective observational study included 37 consecutive men referred to our ambulatory for AUR from the emergency room in 2016. Men younger than 40 years, with a febrile acute prostatitis or prostatic abscess, or a recent (less than 15 days) surgery, obstructive uropathy (bilateral hydroureteronephrosis and serum creatinine > 2.5 mg/dl), myelopathy or polyneuropathy were excluded from the analysis. Other exclusion criteria were the presence of a urinary stone wedged in the urethra, or a massive fecal impaction, a prostate cancer proven or strongly suspected, intake of anticholinergic drugs or antidepressants, Parkinson disease, and dementia. During the first visit, clinical data (age, C-reactive protein (CRP) value, previous PSA value, urinary retention volume and prostate volume) were collected. A modified IPSS questionnaire (IPSS-4), considering question 1, 3, 5 and 6, and investigating previous obstructive LUTS, was submitted to the patients. All the patients maintained a transurethral catheter for a period of 2 weeks, and were orally treated with fluoroquinolones, alpha-blockers and Serenoa Repens extracts. After therapy, the catheter was removed in order to evaluate the spontaneous micturition. All patients underwent ultrasound evaluation and those relapsing or having a post voiding residual ≥ 300 ml underwent to catheterization again. The others received a personalized medical therapy on the basis of their specific clinical history (e.g. alpha blockers, 5-alpha reductase inhibitors).

Results

Overall, the mean age was 68.4 ± 7.1yr. Patients reported a median IPSS-4 of 16. The mean values of PSA, prostate volume and urinary retention volume were 2.8 ng/ml, 42.6 ml and 708.6 ml, respectively. The median CRP value was 3.05 mg/dl. A spontaneous and valid micturition recovery was observed in 11 (29.7%) patients, while 26 (70.3%) needed to be catheterized again. The median IPSS-4 was significantly lower and CRP values significantly higher in patients that recovered from urinary retention (9 vs 17, p < 0.001; 43.00 vs 1.00, p < 0.001, respectively). The other variables taken into consideration were not significantly different between the two groups. IPSS-4 and CRP showed an AUC of 0.85 and 0.87 for the prediction of spontaneous and valid micturition after catheter removal, respectively.

IPSS Question No.	Question referred to the previous month
1. Incomplete emptying	How often have you had the sensation of not emptying your bladder?
3. Intermittency	How often have you found you stopped and started again several times when you urinated?
5. Weak stream	How often have you had a weak urinary stream?
6. Straining	How often have you had to strain to start urination?

Scores: 0 = Not at all; 1 = Less than 1 in 5 times; 2 = Less than half the time; 3 = About half the time; 4 = More than half the time; 5 = Almost always.

Table 1. Simplified IPSS questionnaire (IPSS-4), investigating previous obstructive LUTS, submitted to the patients included in the study.

Variables	TOTAL	URINATION RECOVERY	NO URINATION RECOVERY	P value*
Patients, No. (%)	37	11 (29.7)	26 (70.3)	
Age, yr	68.4 ± 7.1	67.1 ± 4.4	69.0 ± 7.9	0.462
IPSS-modified	16 (15 - 17)	9 (8 – 15)	17 (16 - 18)	< 0.001
CRP, mg/dl	3.05 (0.90 – 13.41)	43.00 (21.23 – 52.29)	1.00 (0.51 – 3.08)	< 0.001
PSA, ng/ml	2.80 ± 0.98	2.61 ± 0.61	2.89 ± 1.11	0.437
Prostate Volume, ml	42.6 ± 13.0	39.2 ± 13.1	44.1 ± 12.9	0.301
Urine Volume, ml	708.6 ± 268.3	727.3 ± 282.3	700.4 ± 267.5	0.786

Parametric data are expressed as mean ± standard deviation; nonparametric data are expressed as median (95%CI). *Means are compared by T-test; medians are compared by Mann-Whitney test.

Table 2. Descriptive characteristics of the patients population.
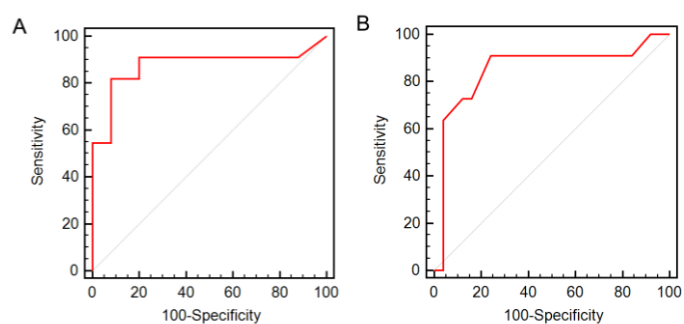

Figure 1. ROC curve indicating the ability of CRP (A) and IPSS-4 (B) to predict the spontaneous urination recovery.

Interpretation of results

It is an established practice to treat patients with AUR with urethral catheterization and alpha blockers. Furthermore, in several centers, it is customary to administer also antibiotic and anti-inflammatory therapy. This therapeutic attitude is correct in order to eliminate all noxae precipitating the AUR, but it poses the risk to standardize all patients with AUR. Conversely, an immediate prostate surgery such as a transurethral resection of the prostate (TURP) is not indicated before the acute causes leading AUR have been resolved (3). In the present study the analysis of a few simple data for patients with AUR resulted to be useful in clinical practice to distinguish patients that probably recover from AUR from those that do not. In particular CRP and IPSS-4 were able to predict the spontaneous micturition recovery after catheterization and alpha blockers and Serenoa Repens therapy for AUR.

Concluding message

CRP and IPSS-4 could be useful tools to predict the spontaneous micturition recovery after catheterization associated alpha blockers and Serenoa Repens therapy for AUR.

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