**Therapeutic Effect of α-blockers and Antimuscarinics in Male Lower Urinary Tract Symptoms based on International Prostate Symptom Score (IPSS) Subscore Ratio**

Chun-Hou Liao 1, Shi-Dong Chung 2, Chia Hsiang Lin 3, Han-Chong Kuo 4

1 Department of Urology, Cardinal Tien Hospital and Fu-Jen Catholic University, Taiwan; 2 Department of Urology, Far Eastern Memorial Hospital, Taipei, Taiwan; 3 Department of Urology, E-Da Hospital, Kaohsiung City, Taiwan; 4 Department of Urology, Buddhist Tzu Chi General Hospital and Tzu Chi University, Hualien, Taiwan

**Introduction**

Antimuscarinics, alone or in combination with α-blockers, appear to be effective and safe for male storage LUTS in men without elevated postvoid residual (PVR) [1-3]. Total prostate volume (TPV), serum prostate specific antigen (PSA) level, maximum flow rate (Qmax), and PVR were commonly used parameters to guide the initial treatment choice for male LUTS [2,3]. But the definite cut-off values of these parameters avoiding first-line antimuscarinics therapy are still controversial. In addition, determining the presence and the degree of BOD is occasionally difficult for primary care physicians (PCPs), especially for non-urololgists without urological diagnostic equipment for uroflowmetry, bladder scanning, or transurethral ultrasound.

We had reported that measuring International Prostate Symptom Score (IPSS) subscores and calculating the IPSS voiding to storage subscore ratio (IPSS-V/S) is a simple and useful method to differentiate failure to voiding and failure to storage lower urinary tract dysfunction [4]. Failure to voiding dysfunction was found in 81.2% of patients with IPSS-V/S>1, while failure to storage dysfunction was found in 75.7% of patients with IPSS-V/S<≤1. To further investigate if IPSS-V/S can be used to help guiding the initial treatment of male LUTS, we conduct a prospective open-labeled study using first-line α-blockers for men with IPSS-V/S>1 and antimuscarinics monotherapy for those with IPSS-V/S<≤1, regardless of their TPV, serum PSA levels, PVR, or Qmax.

**Materials and Methods**

Men aged 40 years or older with a total IPSS (IPSS-T) 8 or more were constitutedly enrolled from January 2010 to December 2010. The IPSS voiding (IPSS-V) and storage subscore (IPSS-S) were recorded separated, and the IPSS-V was calculated. Baseline TPV, transition zone index (TZI), Qmax, PVR, voided volume, serum PSA levels, and quality of life (QoL) index were obtained.

Men with documented genitourinary cancer, acute or chronic urinary retention, diabetes mellitus, frank neuropathy, urinary tract infection, previous urological surgeries, abnormal findings on digital rectal examination or elevated serum PSA levels (> 10 ng/ml) were excluded. Patients were divided into 2 groups according to baseline IPSS-V/S value. First-line doxazosin 4mg and tolterodine 4mg per day monotherapy were given to patients with IPSS-V/S>1 and IPSS-V/S<≤1, respectively, regardless of their TPV, TZI, Qmax, PVR, or serum PSA levels. The IPSS-T, IPSS-V, IPSS-S, QoL, Qmax, voided volume, and PVR were measured at 1 month (visit 1) and 3 months (visit 2) after treatment. Patients rated their symptoms after treatment compared to baseline using a validated global assessment (GRA), a 7-point scale ranging from markedly worse (−3) to markedly improved (+3). Combination therapy with α-blockers and antimuscarinics was prescribed for those with GRA<1 at 1 month after treatment based on investigator’s choice.

**Results**

Table 1 showed the baseline parameters and comparisons between men with IPSS-V/S>1 and IPSS-V/S<≤1. IPSS-T and IPSS-V were significantly higher in patients with IPSS-V/S>1, while IPSS-S was significantly greater in those with IPSS-V/S<≤1 (p<0.001). Patients with IPSS-V/S>1 had higher Qmax (p=0.027). There were no significant differences of baseline age, QoL, TPV, TZI, serum PSA levels, voided volume, or PVR among the 2 groups (Table 1). After medical treatment for 1 month, 89/116 (76.7%) patients receiving tolterodine and 218/279 (78.1%) patients receiving doxazosin reported an improved outcome (GRA=1 ∼ 3 point).

Figure 1 showed the parameters at baseline and changes of parameters after treatment for 1month (visit 1) and 3 months (visit 2) in both groups. The mean IPSS-T, IPSS-S decreased, and QoL improved significantly in both groups. Significant increased Qmax, voided volume, decreased IPSS-V and PVR were noted only in patients receiving doxazosin. There was no significant increase of PVR (from 50.1 to 60.4 ml, p=0.106), and no patient developed urinary retention after tolterodine monotherapy for 1 month (Table 2). The reported adverse effects (AE) including 13 dry mouth (9.8%), 10 blurred vision (7.6%), 7 dry eye (5.3%), 6 dysuria (4.5%), 3 constipation (2.3%) in patients received tolterodine; and 2 diziness (1.5%), 1 general weakness (0.8%), and 1 palpitation (0.8%) in patients received doxazosin. No significant differences of reported AE between both groups.

When comparing baseline parameters between those with GRA<1 and GRA≥1 after treatment, patients with higher baseline Qmax receiving tolterodine (p=0.046) and those with higher TZI receiving doxazosin (p=0.037) more likely to have GRA=1 after treatment (Table 3). For those with GRA<1 after first-line doxazosin, 89% of patients continuing doxazosin monotherapy reported GRA=1 and 70% of patients received additional antimuscarinic therapy had GRA=1 at 3 months. For those with GRA<1 after first-line tolterodine monotherapy, 78% of patients continuing tolterodine monotherapy reported GRA=1 at 3 months and 73% of patients received additional doxazosin therapy had GRA=1 at 3 months.

**Conclusions**

Initial treatment with doxazosin for patients with IPSS-V/S>1 and tolterodine for patients with IPSS-V/S<≤1 is safe and feasible. Using IPSS-V/S ratio can help to guide the initial medical treatment of male LUTS, especially for the PCPs.