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EFFICACY OF TOLTERODINE VARIES IN RELATION TO DIFFERENT URODYNAMIC FINDINGS OF DETRUSOR OVERACTIVITY

Hypothesis / aims of study

Overactive baldder symptoms are usually treated with antimuscarinics. The importance of urodynamics in improving clinical outcome is still debated and many authors consider it useless. Antimuscarinics can in fact improve symptoms by working either on the motor component or on the sensory component, which could give origin to OAB symptoms, making urodynamics irrelevant. Furthermore the motor component of OAB may have different pathophysiological mechanisms: myogenic or neurogenic. At least theoretically when the neurogenic central mechanism is involved antimuscarinics should be less effective. However, clinically, no one has ever described a method to distinguish these two hypothetical causes of OAB. We hypothesises a urodynamic distinction between central (neurogenic) or periferical (myogenic) mechanisms of detrusor overactivity and, on the basis of that, the aim of this study was to verify if different urodynamic findings of detrusor overactivity correlates with a different efficacy of antimuscarinic treatment.

Study design, materials and methods

We prospectively included women referred to our urogynaecological clinic for urinary symptoms. They were all assessed with a specific questionnaire for urinary symptoms and examined by a trained urogynaecologist. Urinary tract infection was always excluded by a negative MSU. All women were submitted to a complete multichannel urodynamic evaluation including a free flow rate and post void residual measurement, a filling cystometry in semi-supine position followed by a provocative phase in standing position during which women were asked to cough repeatedly, to listen to running water and to wash their hands in cool water. At the end a pressure flow study was always performed. Final urodynamic diagnosis was done in accordance with the ICS Standardization Report of Terminology. Detrusor overactivity was then distinguished into two groups depending on its occurrence during the filling phase (group 1) or after provocative manoeuvres (running water and washing hands) (group 2). For analysis we excluded women with genital prolapse > Stage 1 according to the POP-Q classification, a history of previous surgery for incontinence or prolapse and previous antimuscarinic therapy. All women were prescribed Tolterodine 4mg ER once a day. A follow up at 12 weeks included a subjective assessment of symptoms based on a 3-point scale (0=same, 1=improved, 2=cured). We therefore compared the two groups dividing the outcome results in improved or cured considered as a single category and non responders. For statistical analysis we used the Fischer exact test for discrete variables and the t test and Mann Whitney U test for continuous variables. A p value < 0.05 was considered statistically significant.

Results

In this study we originally included 111 consecutive women. For final analysis we however considered only 109 who completed the 12-week course of therapy.

The two groups did not differ for age, menopause, actual use of HRT and BMI as shown in table 1.

Table 1 – Patients characteristics in the two groups. Age and BMI are expressed as median values and range; menopause and actual use of HRT are expressed as absolute value and percentage

	Group 1	**Group 2**	**P**
N	84	25	
Age	54.5 (17-85)	52 (36-78)	0.54*
BMI	25.5 (19-36)	25 (18.38)	0.62^
Menopause	53 (63%)	16 (64%)	1.0°
HRT	13 (24.5%)	6 (37.5%)	0.35°

* t test, ° Fischer exact test, ^ Mann Whitney U test

Looking at antimuscarinic efficacy after 12 weeks, we found a highly significant difference (P = 0.0008) between the two groups as shown in table 2.

Table 2. Non-responders to antimuscarinics in the two groups expressed as absolute number/total group number and percentage.

	Group 1	**Group 2**	**P**
Non responders	12/84 (14%)	12/25 (48%)	0.0008°

° Fischer exact test

Interpretation of results

Our study shows that different detrusor overactivity findings at urodynamics can have significantly different response to tolterodine 4mg slow release after 12 weeks. We speculate that when detrusor overactivity has periferical origin, detected on cystometry during the filling phase, antimuscarinics work better. Alternatively when detrusor overactivity occurs after provocative manoeuvres of central origin, the response rate is significantly lower. This would explain also the high rate of success in group 1 compared to what previously reported in literature.

Concluding message

At the best of our knowledge this is the first study showing a difference in antimuscarinics efficacy in relation to different detrusor overactivity findings during urodynamics.

FUNDING: **NONE**
DISCLOSURES: **NONE**
CLINICAL TRIAL REGISTRATION: **This clinical trial has not yet been registered in a public clinical trials registry.**
HUMAN SUBJECTS: **This study did not need ethical approval because part of normal clinical activity but followed the Declaration of Helsinki Informed consent was obtained from the patients.**