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DOES THE BLADDER CONTRACTILITY CHANGE WITH ANTICHOLINERGIC THERAPY IN WOMEN WITH DETRUSOR OVERACTIVITY?

Hypothesis / aims of study

Urgency to void is a common symptom reported by women with detrusor overactivity. The pathophysiology of how urgency may facilitate detrusor contraction is unclear, though as a general principle motor activity is closely related to sensory input by feedback mechanisms in other systems and thus the same mechanism should exist for the bladder (1). It has been suggested that sensory input of bladder wall stretch results in afferent signals of increased bladder wall tension that are transported to higher centres facilitating a micturition reflex through positive feedback (2). Women with idiopathic detrusor overactivity have more powerful bladder contractions (measured as the maximum bladder external voiding power) than controls and this is associated with the highest urge severity (1). Therefore one of the mechanisms of anticholinergic therapy may be to reduce the positive feedback mechanism and so affect bladder contraction and amplitude.

The aim of our study was to assess the effect of therapeutic anticholinergic therapy on bladder contractility by evaluating contractility during voiding.

Study design, materials and methods

Women were recruited from the urodynamic clinics. All had a previous diagnosis of idiopathic detrusor overactivity and reported frequency at least seven times per day, one or more episodes of urge incontinence per week, and at least seven episodes of urgency per week. Women with urodynamic stress incontinence and those with previous bladder outlet surgery were excluded. After a 2-week washout period subjects were randomised to receive propiverine 20 mg od, propiverine 15 mg tds, oxybutynin 5 mg tds or placebo for 2 weeks. After a second wash out period, they were randomised to receive 2 weeks of one of the treatments not previously used. Ambulatory urodynamic monitoring was performed according to ICS standards for 4 hours, using a standardised protocol with a fluid intake of 180mls every 30 minutes, before and after treatment.

The bladder contractility index is given by the formula BCI = $PdetQ_{max} + 5Q_{max}$ (3).

Data was analysed for the first 2 voids, using Statistical Package for Social Sciences (SPSS) version 12.0 for Windows. The Wilcoxon signed - rank test was used to compare pre - and post - treatment bladder contractility. A p value <0.05 was considered significant.

Results

Seventy-seven women were recruited. The average BCI for the first two voids was 143 (Range: 24-314). Table 1 below shows the values for BCI before and after treatment.

Interpretation of results

The BCI was not statistically different before and after anticholinergic therapy or in response to placebo in either void.

Concluding message

The bladder contractility index does not seem to change in response to anticholinergic therapy suggesting that the therapeutic effect is not mediated by an effect on motor function.

References:

1. Neurourol Urodyn 2003; 22:223-226.
2. Am J Physiol 1986; 251:225-30.
3. BJU Int 1999; 84:14-15.

Table 1: The effect of anticholinergic therapy on the bladder contractility index (BCI).

Treatment	N	VOID 1			VOID 2		
		Pre-treatment mean BCI (Range)	**Post-treatment mean BCI (Range)**	**Significance**	**Pre-treatment mean BCI (Range)**	**Post-treatment mean BCI (Range)**	**Significance**
Propiverine 20mg od	37	143 (38-294)	138 (74-291)	p = 0.11	136 (39-290)	126 (24-193)	p = 0.94
Propiverine 15mg tds	36	163 (38-294)	155 (48-314)	p = 0.46	149 (37-290)	165 (61-282)	p = 0.75
Oxybutynin 5mg tds	37	150 (64-290)	142 (56-268)	p = 0.96	146 (37-272)	137 (29-301)	p = 0.88
Placebo group	22	158 (72-274)	143 (65-300)	p = 0.42	100 (54-240)	134 (32-286)	p = 0.13

P values obtained using Wilcoxon signed – rank test.
N = Number of patients.