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IS ULTRASOUND BLADDER WALL THICKNESS A BETTER OBJECTIVE MEASURE THAN URODYNAMICS FOR OVERACTIVE BLADDER SYMPTOMS?

Hypothesis / aims of study

The relationship between overactive bladder (OAB) symptoms and objective assessment of a these symptoms is complex. Only half of women with OAB are found to have detrusor overactivity on urodynamics. A mean bladder wall thickness (BWT) of greater than 5mm has been suggested to be strongly associated with detrusor overactivity but its application as a screening tool for this condition has yet to be established. There are no current studies that have assessed the relationship between urinary symptoms and BWT. The aim of this study was to assess how BWT was related to patient's symptoms.

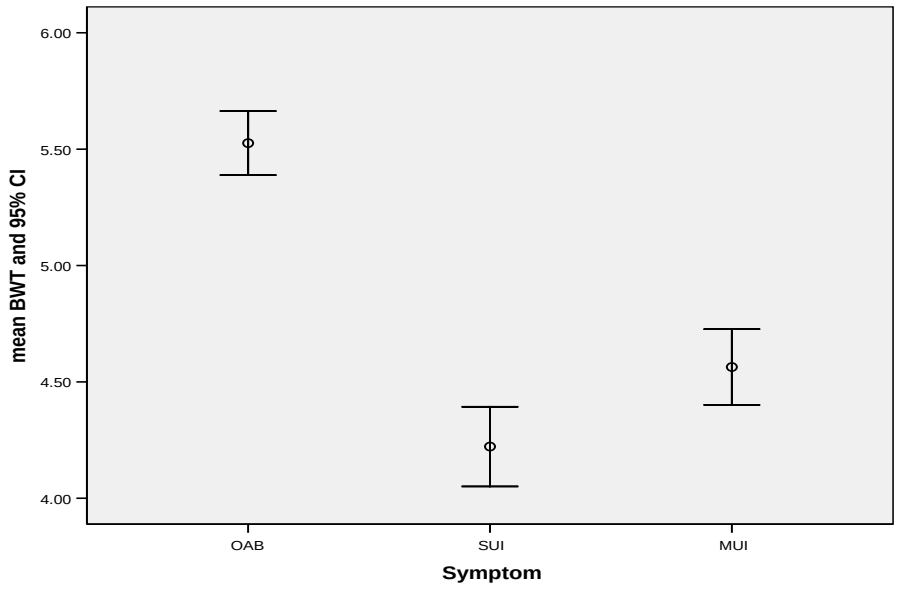
Study design, materials and methods

One hundred and eighty two women were recruited to the study. Women were asked to complete a HRQoL questionnaire (1), four day bladder diary, VAS for urgency scaled between 1 and 10. Women were categorised into reporting symptoms of the overactive bladder syndrome, stress urinary incontinence or mixed urinary incontinence from a validated symptom questionnaire (1). From the bladder diary mean daytime and nighttime frequency were determined as well as mean number of incontinence episodes daily.
Women were also scanned transvaginally after voiding on a flowmeter and the bladder wall thickness in an empty bladder (<50ml) was measured at three anatomical sites: the trigone, dome of the bladder, and anterior wall of the bladder. The mean of these three measurements was calculated as the mean BWT. Women then underwent urodynamics studies using a 10F filling catheter, 4.5F intravesical and 4.5F rectal pressure catheters. Urodynamics studies consisted of filling and voiding cystometry and the diagnosis obtained was categorised into detrusor overactivity (DO), urodynamic stress urinary incontinence (USI) or women who had both DO and USI (UMI) and inconclusive urodynamics (ICU) where no diagnosis was obtained. Mean BWT and its relationship with women's symptoms, bladder diary data and urgency severity was assessed using a threshold of 5mm (2). Comparison was made between the association of urodynamics diagnosis with patient symptoms or mean bladder wall thickness with patients' symptoms.

Results

The mean age of our group of patients was 59 years. Eighty five women (47%) reported overactive bladder symptoms, 50/182 (28%) reported stress urinary incontinence, and 47/182 (26%) women reported mixed urinary incontinence.
Of the women with OAB, 55/85 (65%) had detrusor overactivity on urodynamics and 72/85 (85%) had a mean BWT of greater than 5mm.When considering bladder diary data, women with night time frequency of more than once per night had a mean BWT of 5.3mm (95% CI 5.0-5.5) whereas women with night time frequency of one or less episodes had a mean BWT of 4.3mm (95% CI 4.0-4.7). There was no difference in mean BWT when analysing daytime frequency ($p<0.05$, Mann Whitney U test).
Women with a VAS urgency score of less than or equal to 2 had a mean BWT of 4.2mm (SD:0.5). Women with a VAS urgency score of greater than 2 had a mean BWT of 5.2mm (SD 0.77) ($p<0.05$, Mann Whitney U test).

Figure 1: Mean bladder wall thickness (mm) according patients' symptom categories



The symptom groups had a significantly different bladder wall thicknesses ($p<0.05$ Krushall Wallis test). No significant relationship existed between any urodynamic parameter and the symptom groups shown in graph 1.

Interpretation of results

Mean BWT shows a stronger association with womens' reported OAB symptoms than the urodynamic diagnosis with 85% of the women in our study with OAB having an elevated mean BWT when compared to the 65% of women with OAB who also had DO.
It was also found that elevated mean BWT was associated with increased severity of urgency as determined by VAS, and increased night time frequency. There was no association of mean BWT and daytime frequency.

Concluding message

Mean BWT is more closely related to both symptoms and diary data than urodynamics diagnosis. It may be a useful tool in symptom assessment and an objective measure of bladder dysfunction.

References

1. Br J Obstet Gynaecol. 1997 Dec;104(12):1374-9
2. Br J Obstet Gynaecol. 1996 Sep;103(9):904-8

Specify source of funding or grant	**no external funding**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**St. Marys LREC**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**