

## OVERACTIVE BLADDER DEFINITION AND ULTRASOUND MEASUREMENT OF BLADDER WALL THICKNESS: THE RIGHT WAY WITHOUT URODYNAMICS

### Aims of Study

The ICI has recently proposed non invasive methods, excluding urodynamics, for choosing treatment for subjects with irritative bladder symptoms. This was based on the definition of overactive bladder (OAB) and the absence of complicating factors, such as, haematuria or significant post-void residual. It has previously been shown that this symptomatic diagnosis has poor specificity for women with detrusor instability(1). The ultrasound measurement of bladder wall thickness (BWT) has been proposed as a high reproducibile, sensitive method of screening for detrusor instability in women. Unfortunately this measurement does not have high specificity for diagnosing detrusor instability. This study attempts to determine whether the combination of mean bladder wall thickness ultrasound measurement with the diagnosis of OAB will improve the sensitivity and specificity of diagnosis when compared to urodynamic testing.

### Methods

Women with urinary symptoms referred to the outpatient clinic were included in this study. A 5-day frequency volume chart was recorded prior to attending the hospital and a specific questionnaire on urinary symptoms was also completed on arrival. A gynaecological examination, an ultrasound measurement of BWT and complete urodynamic test were performed on each woman. All the data were then stored onto a dedicated database. Women were then grouped according to the presence or absence of OAB. The two groups were then compared for urodynamic diagnosis and BWT. A mean BWT value  $\geq 5\text{mm}$  was considered as cut-off value for unstable bladder as originally described. The Anova One Way test was used for comparison and a p value  $<.05$  was considered significant. The positive and negative predictive value were also calculated both for women classified using the OAB definition alone and for BWT combined with the OAB definition.

### Results

One-hundred-and-sixty-one women with a mean age of 51,5yrs ( $\pm 10,9\text{SD}$ ) were included. Seventy (mean age 52,5yrs,  $\pm 12,1\text{SD}$ ) corresponded to OAB criteria whereas 91 (mean age 50,7yrs,  $\pm 9,8\text{SD}$ ) did not. The two groups did not statistically differ for age. Table 1 shows the relationship between urodynamic diagnosis and bladder wall thickness measurement in women selected as having OAB.

Table 1 – Women having the OAB diagnosis compared to UDS diagnosis and BWT

UDS diagnosis	N	Mean BWT	95 % Confidence Interval for Mean		Significance
			Lower Bound	Upper Bound	
Stable bladder	46	3,6	3,4	3,9	p < 0.001
Unstable bladder	24	5,0	4,6	5,3	

Table 2 shows the relationship between urodynamic diagnosis and bladder wall thickness measurement in women without OAB according to their symptoms.

Table 2 – Women without OAB in relation to urodynamic diagnosis and BWT

UDS diagnosis	N	Mean BWT	95 % Confidence Interval for Mean		Significance
			Lower Bound	Upper Bound	
Stable bladder	76	3,9	3,6	3,7	p . 098
Unstable bladder	15	4,3	3,8	4,8	

Finally, using urodynamics as the gold standard, we calculated the positive predictive value both for the OAB symptoms alone, which was 34,3%, and for OAB symptoms together with BWT which was 83,3%. The negative predictive value was 83,5% for the OAB symptoms alone and 83,2% for OAB symptoms together with BWT.

### Conclusions

This study shows a major improvement in positive and negative predictive value with the concomitant use of ultrasound measurement of bladder wall thickness and OAB symptoms compared with using OAB symptoms alone for diagnosing women with detrusor instability. We therefore strongly suggest the combination of tests before deciding the treatment of women with urinary symptoms if urodynamic is not performed.