94

Serdinšek T[1], But I[1]
1. *University Medical Center Maribor*

ROLE OF SINGLE DETRUSOR WALL THICKNESS MEASUREMENT USING TRANSVAGINAL ULTRASOUND IN WOMEN WITH URINARY INCONTINENCE

Hypothesis / aims of study

Ultrasonographic measurement of detrusor wall thickness (DWT) in women with urinary incontinence (UI) has been shown to discriminate between women with diagnosed detrusor overactivity and those with urodynamic stress incontinence [1]. However, the optimal method (transvaginal, translabial, transabdominal ultrasonography), anatomic location and number of measurements (single measurement versus average DWT of several different measurements) is still a subject of debate [2]. In our opinion, DWT measurement should be as precise, reliable and time-saving as possible. With these criteria in mind, our aim was to determine the value of single transvaginal DWT measurement at the anterior bladder wall as a screening and diagnostic test for OAB.

Study design, materials and methods

We reviewed records of women with UI examined at our Urogynaecology office between January 2012 and March 2014. Only patients in whom complete data was available (history, clinical examination, Q-tip testing, POP-Q measurements, flowmetry and PAD test results) and DWT was measuredwere included in this retrospective study. DWT was measuredat the anterior bladder wall in sagittal plane using transvaginal ultrasound at maximal bladder volume of 50 ml. At time of the examination, each patient was also given a diagnosis of stress UI (SUI), mixed UI (MUI), OAB or other micturition disorders (MD) according to their history, clinical examination and test results.

Statistical analysis was performed with SPSS 17.0 software using simple statistic tools, non-parametric Mann-Whitney test and ROC curve analysis. A p-value <0.05 was considered statistically significant.

Results

Among all women for whom the complete data was obtained (N=280) there were 70 patients with the diagnosis of SUI, 72 with symptoms of MUI, 127 with symptoms of OAB and 11 with MD. Average age of all patients was 58±12years, 55±12 years for patients with SUI, 56±12 years with MUI, 60±12 years with OAB and 629±14 years for patients with MD. Patients with OAB were significantly older than patients with SUI (p=0.008). Average DWT for all patients was 2.6±0.6mm. Descriptive statistics for each group's DWT is presented in Table 1.

Table 1: Descriptive statistics for DWT in each group

	SUI	**MUI**	**OAB**	**MD**
Average DWT [mm]	2.6	2.6	2.6	2.4
SD [mm]	0.6	0.6	0.6	0.7
Min [mm]	1.2	1.5	1.6	1.5
Max [mm]	4.2	4.7	5.0	3.7

Using non-parametric Mann-Whitney test there was no statistically significant difference between patients with SUI and OAB (p=0.931), making DWT inappropriate discriminator between these two groups of patients. In spite of this, ROC curve was plotted to investigate whether DWT could discriminate between patients with SUI and OAB at higher DWT values (Figure 1). The area under the ROC curve was 0.50 (95% CI = 0.42 - 0.59, p=0.931). DWT cut-off value set at 3.3mm represents a test with sensitivity of 18%, specificity of 89%, positive predictive value (PPV) of 74%, and negative predictive value (NPV) of 37%. With DWT ≥4.0mm the test sensitivity is 6%, specificity 97%, PPV 78% and NPV 36%.

Interpretation of results

Although measurement at the anterior bladder wall seems reasonable as this area is very close to ultrasound probe, enabling as accurate measurement as possible, there is no statistically significant difference in DWT in patients with OAB and pure SUI. As specificity and PPV of DWT measurement are very high with cut-off value of 3.3mm and 4.0mm when using DWT as a discriminator between patients with OAB and SUI, this test is of little value in everyday clinical practice due to its very low sensitivity. Therefore, diagnosis of OAB in patients with UI should be based on thorough history, clinical examination and questionnaires with ultrasonography as a secondary tool in determining the possible causes of UI.

Concluding message

Single measurement of DWT on anterior bladder wall using transvaginal ultrasound is not very useful screening or diagnostic test for discrimination between patients with OAB and other forms of UI.

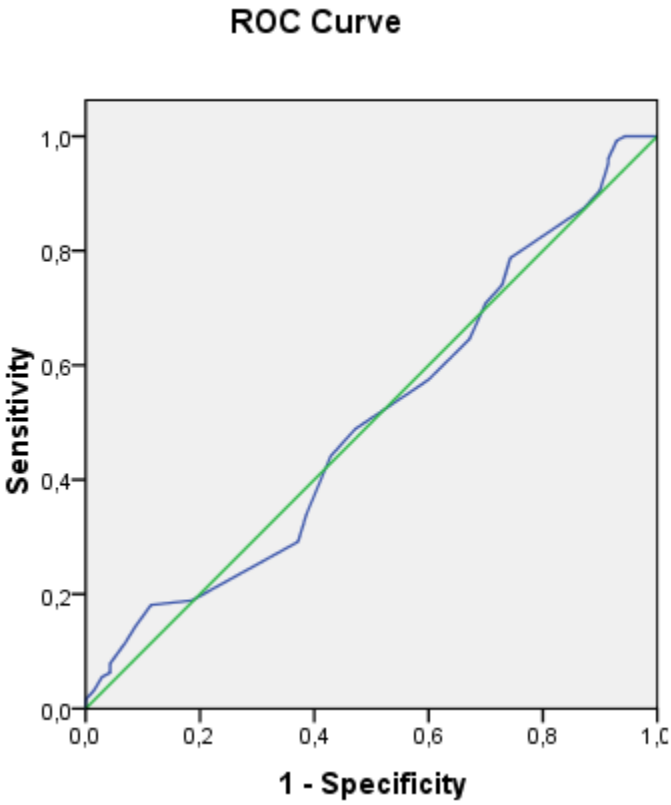

Figure 1: ROC curve for DWT and OAB

References

1. Panayi DC, Tekkis P, Fernando R, Hendricken C, Khullar V. Ultrasound measurement of bladder wall thickness is associated with the overactive bladder syndrome. Neurourol Urodyn. 2010;29(7):1295-8.
2. Kuhn A, Bank S, Robinson D, Klimek M, Kuhn P, Raio L. How should bladder wall thickness be measured? A comparison of vaginal, perineal and abdominal ultrasound. Neurourol Urodyn. 2010;29(8):1393-6.

Disclosures

Funding: No funding or grant **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** This was a simple retrospective analysis of data obtained from medical records. The names of the patients were not disclosed. Our Ethical Committee felt that it is not necessary to obtain their approval to conduct this research. **Helsinki:** Yes **Informed Consent:** No