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Rosier P[1], Hogen Esch F[2]
1. *Department of Urology University Medical Centre Utrecht,* ***2.*** *SOMT, Amersfoort, The Netherlands*

FEMALE EXPERT VOIDERS UROFLOWMETRY AND TEST -RETEST VARIATION

Hypothesis / aims of study

Since the introduction of the term (adult female) dysfunctional voiding in the latest ICS/IUGA standard, ([cited]: '...characterized by an intermittent and/or fluctuating flow rate due to involuntary intermittent contractions of the peri-urethral striated or levator muscles during voiding in neurologically normal women.'), the observation of the flowrate-pattern in female patients has gained importance. It is advised in this report to consider the flowrate to be abnormal if maximum flow, 'normalized for volume is under the 10th centile of the Liverpool nomogram'. Test retest data in adult female uroflowmetry is however very scarce.
Uroflowmetry results can be influenced by the mental stress of the given situation, in patients, but also in healthy volunteers, unfamiliar with the situation. We report on uroflowmetry test-retest results of very experienced female pelvic floor physiotherapists, without any symptom lower urinary tract abnormalities with the premise that these persons are experts in pelvic floor function and therefore expert voiders. We expect pelvic floor physiotherapists to be very familiar with the situation, and to produce the best of the best flow rates. Optimal test and retest values can be obtained in this manner.

Study design, materials and methods

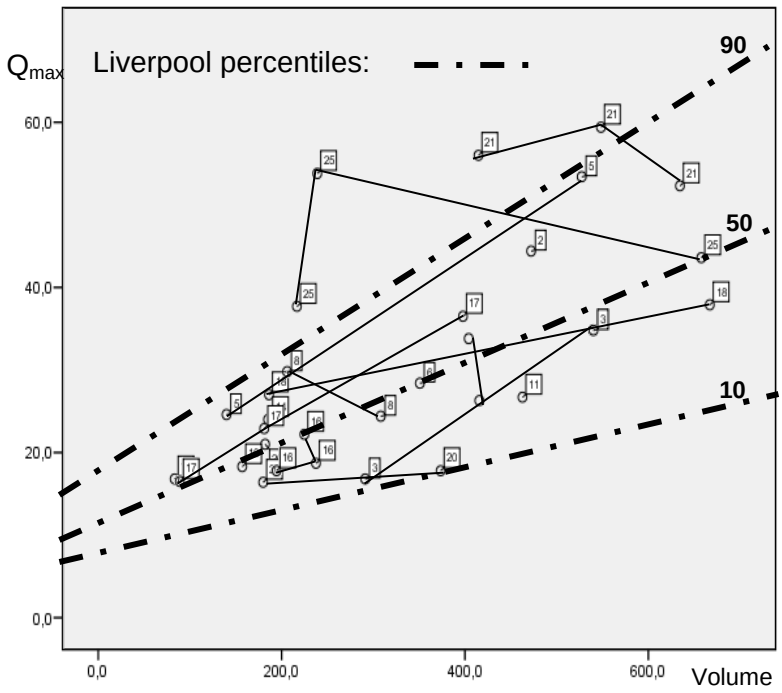
During one post graduate training day dedicated to education on 'pelvic floor and voiding-function', 17 female physiotherapists gave written informed consent to void in a flow meter as many times as wanted, at the moment that they felt 'the need'. Three flow meters with adjustable chairs were available in separate (training) rooms at the school for physiotherapy with adequate privacy. A pre-posted IPSS score was completed to screen for signs or symptoms voiding (dys-) function, some dedicated questions were added: number of vaginal deliveries and/or caesarean sections; number of urinary tract infections in the last 12 months and history of uro/gynaecological surgery.

Results

Physiotherapists were 50 years (range 41-56) of age and had pelvic floor physiotherapy practice –experience for ±20 years on average. One physiotherapist with an IPSS of 17, after TVT, was excluded. One –included- person had an IPSS of 6, all others had <4 on this score. Five women were 'slightly bothered about their voiding' all other '(almost) satisfied'. Two persons have had one urinary tract infection and 2 had gynaecologic surgery in their history. Nine had 2 vaginal deliveries, 5 had 3 vaginal and 1 had four vaginal deliveries. No one had a caesarean section. No one reported urinary incontinence or nocturia (>1), urinary urgency and or frequency. The table shows the results, maximum flow and volume voided, of 3 voidings: 50% of the voiding showed a bell shaped curve and in 50% there were some irregularities. Three persons had 3 or four perfect flows.
Flow differences were associated with volume differences (Pearson's r 0,76 p .001). Largest individual difference in Qmax was 28,8 mL/s, and the largest individual volume difference was 584 mL in another person. In 60% the difference in Qmax was >10mL/s and in 70% the volume difference was >100mL. There was no relevant association of any of the flow-parameters with the symptoms or previous history. We have not observed a learning (improving or deteriorating) effect in this series.

	N	Minimum	Maximum	Mean	Std. Deviation
Qmax1 (mL/s)	16	18,3	53,4	31,8	11,0
Volume1(mL)	16	157,0	634,4	350,7	155,2
Qmax2 (mL/s)	10	16,4	59,4	28,3	14,0
volume2 (mL)	10	83,3	657,7	292,8	186,8
max3 (mL/s)	7	16,5	56,0	33,5	16,9
volume3 (mL/s)	7	89,0	667,0	359,6	202,2

8 persons voided 2 or 3 times above the 50 percentile of the Liverpool –nomogram. The figure shows the 90, 50 and the 10th percentile (dotted lines, should be curved downwards at volumes <100). The lines connect the flows per person (not in sequence).



All symptom free, 'expert voiders' showed Qmax –volume to be above the 10th percentile of the ICS/IUGA advised nomogram. 40 percent of the retest values approximately 'paralleled' the nomogram line and associated with voided volume differences, but many did not. In many of these women the larger (than ±200mL) voiding was not in a significantly better percentile than the small volume voiding.

Interpretation of results

Uroflowmetry test retest variation in women is large and about half of the expert voided flows was not perfectly bell shaped. Qmax can however be normalized to volume in the Liverpool nomogram and also smaller volumes voided (100-200mL) appear to be reliable in women without voiding symptoms. This does not provide evidence for the specificity of an abnormal (10th percentile) flow.

Concluding message

Also in symptom free female 'expert voiders' a large test retest variation of uroflowmetry values and curves was observed with fundamental consequences for diagnosis and treatment of 'dysfunctional voiding', as a diagnosis on the basis of (one) uroflowmetry.

Disclosures

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