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Alloussi S H[1], Mürtz G[2], Naique S[1], Michel F[2], Wagenpfeil S[3], Alloussi S[1]
1. *Hospital of Neunkirchen, Teaching Hospital of the University of Saarland, Dep. of Urology, Neunkirchen, Germany,* ***2.*** *APOGEPHA Arzneimittel GmbH, Dresden, Germany,* ***3.*** *Institute for Medical Biometry, Epidemiology and Medical Informatics, University of Saarland, Homburg, Germany*

A SIMPLIFIED APPROACH TO DISTINGUISH BETWEEN DIFFERENT FORMS OF URINARY INCONTINENCE USING A SHORT FORM OF URINARY INCONTINENCE QUESTIONNAIRE – DOES IT CORRELATE WITH THE VIDEOURODYNAMIC ASSESSMENT ?

Hypothesis / aims of study
The aim of this prospective analysis was to establish a time-economic and easily understood short questionnaire, able to distinguish between different forms of urinary incontinence, especially detrusor overactivity, stress urinary incontinence and mixed urinary incontinence (1). The overall score of the questionnaire was compared with the findings of the videourodynamic assessment.

Study design, materials and methods
A total of 110 patients [mean age 59 (± 17) years, 71 (64,5%) women, 39 (35,5%) men] presenting at our unit with the key symptom of urinary incontinence, were enrolled in this prospective analysis. All had to complete a short questionnaire consisting of four questions prior to undergoing a general urological assessment that included videourodynamics. The questions (Q) and respective score distribution were based on yes or no answers. Q1: Do you have involuntary loss of urine when you undertake physical activities ? (Yes -5. No 0). Q2: Can you voluntarily interrupt your micturition ? (Yes -2. No 0). Q3: Do you have the desire to void (urgency) before you have involuntary loss of urine ? (Yes +5. No 0). Q4: Do you leak urine before you reach the toilet ? (Yes +5. No 0). In addition to the total score for each patient arithmetic means (AM) and standard deviations (SD) were calculated for the following diagnostic entities, which were classified (3) according to the respective videourodynamic findings: (1) control group of patients with normal videourodynamic findings (n=4). (2) idiopathic detrusor overactivity (n=74). (3) stress urinary incontinence (n=19). (4) Mixed urinary incontinence (n=13). Videourodynamic assessment was conducted according to the standards established by the International Continence Society (2).
Comparison of AM values is due to the t-test for two independent samples. Quantitative data are given as AMs and SDs. Qualitative data are given as absolute and relative frequencies.

Results
Q1 was usually denied in the case of detrusor overactivity (69/74; 93%), it was confirmed in the case of stress urinary incontinence (18/19; 95%).
Q2: In the case of mixed urinary incontinence Q2 was usually denied (11/13; 85%). Q2 was less discriminative both with respect to stress urinary incontinence as well as detrusor overactivity.
Q3: In case of mixed urinary incontinence Q3 was confirmed in most cases (11/13; 85%). Q3 was less discriminative both with respect to stress urinary incontinence as well as detrusor overactivity.
Q4: In case of the control group presenting with normal videourodynamic findings Q4 was denied in all cases (4/4). In case of mixed urinary incontinence the majority confirmed the question (10/13; 77%). In case of stress urinary incontinence this question evoked ambiguous answers (Q4 “yes”: 9/19; 47%).

In addition to the analysis of the four questions a total score was assessed for each patient. The total scores of all patients allocated to the four diagnostic groups according to the videourodynamic findings yielded the following results, which are given as AMs and SDs: (1) control group: 2.50 ± 2.9. (2) detrusor overactivity: 6.24 ± 4.3. (3) stress urinary incontinence: -1.05 ± 4.5. (4) mixed urinary incontinence: 5.1 ± 4.2. Comparison of the total scores of the questionnaire showed that the AM of the detrusor overactivity group was significantly higher ($p<0.001$) than the AM of the stress urinary incontinence group as was confirmed by the nonparametric Mann-Whitney U-test).

Interpretation of results
Q1 is highly discriminative with respect to stress urinary incontinence as opposed to detrusor overactivity. Q2 and Q3 are suggestive of mixed urinary incontinence. A positive response to Q4 is highly suggestive of detrusor overactivity. Interestingly, all patients in the control group responded “no” Q4 as well as Q1. Additional statistical analyses aimed at further reducing the number of questions showed that this was not feasible.

The total score of the questionnaire differentiates across the clinical entities, especially high total scores for the detrusor overactivity group are in distinct contrast to low scores of the stress urinary incontinence group. In the mixed urinary incontinence group obviously the detrusor overactivity component determines the symptom profile. The high AMs in both the detrusor overactivity and the mixed urinary incontinence groups are related to the predominant overactive detrusor component.

Concluding message
Based on this preliminary study it seems feasible to use a short form of urinary incontinence questionnaire to differentiate between stress urinary incontinence and detrusor overactivity or mixed urinary incontinence. However, the well-known limitations of questionnaires have to be considered. This approach of a simplified short and time-economic questionnaire will be further pursued by recruiting more patients representative of an independent validation cohort.

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