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OVERACTIVE BLADDER SYMPTOMS ARE NOT RELATED TO DETRUSOR OVERACTIVITY.

Hypothesis / aims of study
To identify predictors of Detrusor Overactivity (DO) using a logistic regression model based on specific risk factors. The purpose of this model was to further our understanding of the risk factors contributing to DO patophysiology and to elucidate its relationship to overactive bladder symptomatology.

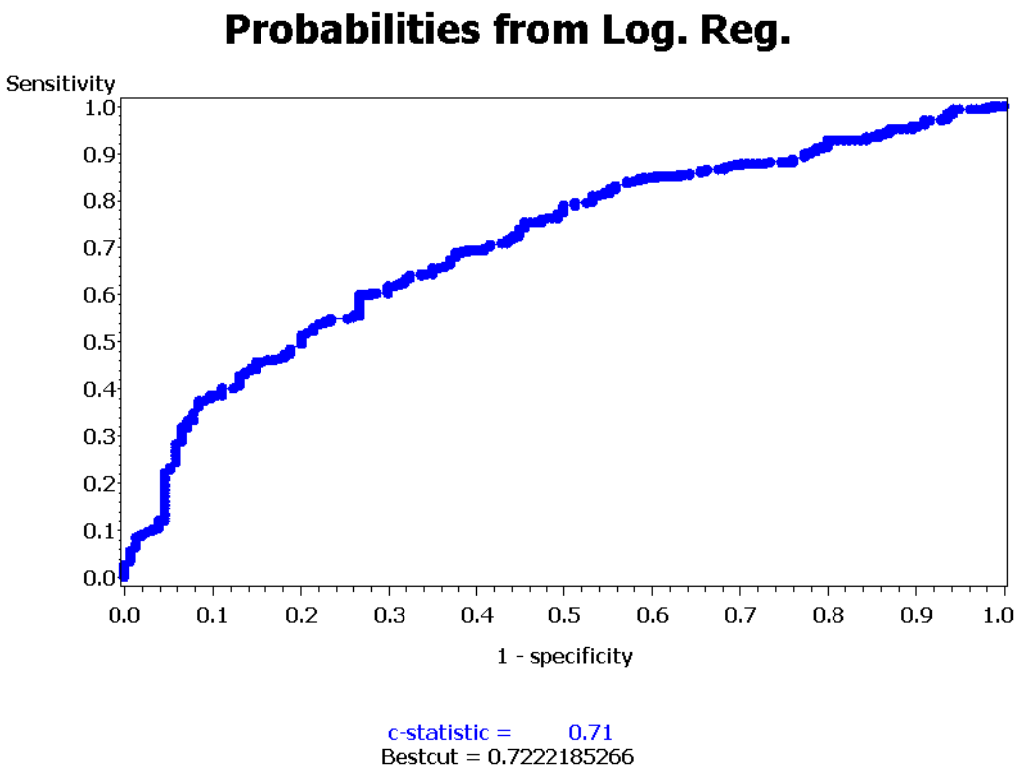
Study design, materials and methods
This observational study included data on all active patients attending an urogynecologic referral clinic during 06/2005 to 08/2005. A multivariable logistic regression analysis was performed to all the cohort patients with DO as the dependent variable and the following independent variables: Day time urinary frequency (≥8 /<8), urodynamic stress urinary incontinence (USUI) (yes/no), urge urinary incontinence (UUI) (yes/no), rectocele (grade 3-4/<3),cystocele (grade 3-4/<3), nocturia (≥2/<2), urinary urgency (yes/no), age (≤50 years/>50)and parity (0/1/2/>2), BMI (up to 26, 27-30, > 30) and bacteriuria (yes/no). All variables were retained in the model, regardless of statistical significance or effect size. The predicted probabilities for each individual were output to a dataset. Receiver operating characteristic (ROC) curve analysis was used to evaluate the utility of the predicted probability of DO and to determine the best cut-off for classification. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were estimated for the chosen cut-off.

Results
Of the 551 patients seen during the study period, 383 (70%) had urodynamically proven DO. Complete data regarding DO status and all symptoms above were present for 492 women (Table 1). The median age was 60 years (10-94) and median parity was 2 (0-10).

Table 1: Odds Ratio Estimates for Detrusor Overactivity

Effect	Point Estimate	95% Confidence limits	P-value
Age (≥50 vs. < 50)	2.452	1.561-3.851	<0.001
Nocturia (≥2 vs. <2)	1.563	1.005-2.43	0.048
Frequency (≥8 vs. <8)	0.85	0.173-1.333	.0484
USUI (yes vs. no)	1.345	0.842-2.148	0.215
UUI(yes vs. no)	1.416	0.821-2.442	0.211
Urgency (yes or no)	1.021	0.565-1.845	0.944
Cystocele (3 or 4 vs. <3)	1.149	0.713-1.853	1.853
Rectocele (3 or 4 vs. <3)	0.629	0.378-1.045	0.073
Bacteriuria	1.222	0.635-2.349	0.5499
Overweight (BMI 26-30 vs. <26)	1.234	0.748-2.035	0.249
Obesity (BMI≥30 vs. <26)	1.515	0.922-2.49	
Parity (1 vs. none)	0.939	0.43-2.053	0.157
Parity (2 vs. none)	0.764	0.389-1.501	
Parity (more than 2 vs. none)	1.332	0.667-2.659	

vs. - versus, UUI - Urge Urinary Incontinence



Interpretation of results

The only variables significantly related to DO at the 0.05 significance level (odds ratio in Table 1) were Nocturia (≥2) and age (>50). The area under the ROC curve was 0.71, indicating fair diagnostic ability. The best cut-off value balancing sensitivity and specificity was determined to be 0.72. The performance of the cut-off was fair showing a sensitivity = 60.4%, specificity = 72.1, PPV = 82.6% and NPV = 45.3%. Urgency and frequency were not significantly related to DO, after adjustment for all other factors in this multiple logistic regression model.

Concluding message

Using this model, the presence of age above 50 and nocturia ≥2 were independent risk factors that could predict DO with fair diagnostic ability. Remarkably, the cardinal symptoms of overactive bladder syndrome, namely, urinary urgency, frequency and UUI, were not found to be statistically significantly associated with DO. The next step for model building is to validate this prediction model in an external sample.

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CLINICAL TRIAL REGISTRATION: **This clinical trial has not yet been registered in a public clinical trials registry.**

HUMAN SUBJECTS: **This study was approved by the Evanston Northwestern Healthcare Review Board and followed the Declaration of Helsinki Informed consent was obtained from the patients.**