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FACTORS ASSOCIATED WITH DIAGNOSIS OF DETRUSOR OVERACTIVITY IN WOMEN.

Hypothesis / aims of study
To identify the variables that can be predictive in determining the diagnosis of detrusor overactivity (DO) in women.

Study design, materials and methods
The BUS study was a multicentre study whose primary objective was to estimate the accuracy of bladder ultrasound (index test) in the diagnosis of DO in women who present with symptoms suggestive of overactive bladder(1). For reference standard, UDS was performed on all patients for DO verification. Further analysis included using univariate and multivariable logistic regression analysis to generate predictive probabilities of variables that could potentially assist in diagnosis of detrusor activity. Historical features that were included in the regression model were age, menopausal status, parity, body mass index, presence of mixed symptoms and previous antimuscarinic treatment. In statistical terms, the logistic modelling aimed to derive a diagnostic regression function, i.e. probability of DO given test result.

Results
We recruited a total of 687 women and urodynamic dataset was available for 666 women out of which 406 (61%) had DO. The mean age was 53.2 years and mean BMI was 30.6. The following 14 clinical history variables considered to be potentially important were explored in univariate logistic regression analyses with a diagnosis of DO as the outcome.

Results of univariate analyses in predicting DO

Variable	Data type	p-value	OR (95%CI) if significant	Frequencies
Age, years	Continuous	0.89		
BMI, kg/m^2	Continuous	0.41		
Ethnicity (white/black/Asian/other)	Categorical	0.48		
Vaginal birth=yes	Binary	0.81		
Clinical history suggests mixed incontinence=yes	Binary	0.27		
If clinical history suggests mixed incontinence, which came first (stress/urge/unsure/na)	Categorical	0.54		
Previous treatment with antimuscarinics=yes	Binary	0.0005	1.84(1.30, 2.59)	70% (156/222) DO when=yes 56% (248/441) DO when=no
Previous UTI in last 12 months=yes	Binary	0.11		
History of voiding difficulties=yes	Binary	0.16		
Post-menopausal=yes	Binary	0.91		
Parity (0/1/2/3/4+)	Categorical	0.23		
Previous incontinence surgery=yes	Binary	0.75		
Previous POP surgery=yes	Binary	0.24		

Results of multivariable analyses

Model	Significant variables	p-value	OR (95%CI) if significant
All variables included	Previous treatment with antimuscarinics=yes	0.01	1.63 (1.12, 2.36)
All variables included, multiple imputation used for missing data	Previous treatment with antimuscarinics=yes	0.0009	1.82 (1.28, 2.59)

For the following subgroups, a priori analysis was planned; we calculated the area under the curve (AUC) using receiver operator curves.

Comparison of AUCs for subgroups

Variable		AUC	95% CI	p-value
Previous treatment with antimuscarinics	=No	0.534	(0.479, 0.589)	0.73
	=Yes	0.517	(0.435, 0.599)	
Clinical history suggested mixed incontinence	=No	0.532	(0.458, 0.606)	0.60
	=Yes	0.507	(0.449, 0.565)	
Presence of UTI in the last 12 months	=No	0.522	(0.473, 0.570)	0.39
	=Yes	0.597	(0.430, 0.765)	
Patients with voiding difficulties	=No	0.517	(0.456, 0.578)	0.81
	=Yes	0.529	(0.459, 0.599)	
Previous incontinence surgery	=No	0.522	(0.475, 0.569)	0.84
	=Yes	0.543	(0.346, 0.741)	
BMI	<25	0.511	(0.415, 0.607)	0.92
	>=25	0.516	(0.464, 0.569)	

Interpretation of results

From the above tables drawn from this large prospective cohort study in women with frequency, urgency without or with urge incontinence or urge predominant mixed urinary incontinence, we can infer that the most siginificant variable in predicting the presence of DO is previous treatment with antimuscuranics [p 0.01] OR 1.63 (1.12, 2.36)

Concluding message

The historical factors like age, BMI, ethnicity, history of vaginal births, history of previous cystitis or voiding difficulties etc. do not predict DO whereas history previous use of antimuscarinics is associated with increased likelihood of presence of DO.

References

1. Latthe P.M., Champaneria R., Khan K.S. Systematic review of the accuracy of ultrasound as the method of measuring bladder wall thickness in the diagnosis of detrusor overactivity. Int Urogynecol J Pelvic Floor Dysfunct 2010; Aug;21(8):1019-24

Disclosures