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CHILDHOOD ELIMINATION DYSFUNCTION: A POTENTIAL AETIOLOGICAL FACTOR FOR ADULT OVERACTIVE BLADDER, VOIDING DIFFICULTY AND BOWEL DYSFUNCTION.

Hypothesis / aims of study
The overactive bladder (OAB) has long been considered idiopathic in origin in the majority of patients. Whilst there is evidence to support the emergence of OAB in response to an alteration in bladder outlet resistance, the possibility of this carrying over from childhood has not been explored. The aim of this study was to investigate the presence of childhood dysfunctional LUT symptoms in adult women with OAB or voiding dysfunction +/- bowel problems.

Study design, materials and methods
A 2 part questionnaire was devised and self-administered to 191 consecutive women attending a urogynaecological clinic (UG) for urinary symptoms and to 251 normative women. The first section asked for recall of childhood symptoms known to be associated with Dysfunctional Elimination Syndrome (DES), whilst the latter section explored current bladder and bowel problems. Data sets from the normative cohort (n=55) reporting current bladder problems were excluded. Descriptive statistics, chi squared and Mann-Whitney-U tests were used to compare variables.

Results
Urogynaecological patients had significantly higher total childhood scores than the cohort of normative women (UG: mean childhood score 3.44/20, median 2/20, IQR 0-5/20; Normative: mean childhood score 1.81/20, median 1/20, IQR 0-3/20; $p< 0.001$).

Table 1 shows the significant associations that were found between childhood OAB and bowel dysfunction, and adult OAB and stress incontinence. Table 2 indicates a marked association between childhood symptoms of voiding dysfunction and adult bladder emptying problems. An effect of childhood bowel dysfunction is also suggested. From Table 3 it appears that the apparent transit problems of childhood may be linked to adult bowel problems, however, childhood faecal soiling shows no such association.

Logistic regression analysis revealed that the symptom of childhood urinary urgency was the only significant covariate to be associated with co-existing bladder emptying and bowel dysfunction in adulthood. Urinary urgency was shown to predispose women to a 2.3 times increased risk of dysfunctional elimination symptoms as an adult.

Table 1: Significant associations between key childhood DES symptoms and adult OAB symptoms and stress incontinence (Blank cells indicate non significant association).

Childhood symptoms	**Adult urgency**	**Adult frequency**	**Adult urge incontinence**	**Adult nocturia**	**Stress incontinence**
Urgency	p<0.001		p<0.001	p=0.01	p=0.013
Frequency			p<0.001	p=0.018	p<0.001
Urge incontinence	p=0.001		p<0.001	p=0.003	p=0.001
Urge medication			p<0.001		
Painful bowel actions often	p<0.004	p=0.030	p <0.001		p<0.001
Bowel actions like marbles	p=0.006		p=0.006		p=0.001
Faecal soiling	p=0.036		p=0.004		p=0.012

Table 2: Significant associations between key childhood DES symptoms and adult voiding / bladder emptying problems (Blank cells indicate non significant association).

Childhood symptoms	**Adult UTI**	**Adult hesitancy**	**Adult Incomplete emptying**	**Adult post-void leak**
Incomplete emptying	p=0.054	p< 0.001	p< 0.001	p< 0.014
Slow flow	p< 0.001	p< 0.001	p< 0.001	p< 0.001
Intermittent urine flow		p< 0.001	p< 0.001	p< 0.001
Painful bowel actions often	p=0.038	p=0.033	p< 0.001	p= 0.009
Bowel medication		p=0.035	p=0.001	
Faecal soiling	p=0.048	p= 0.002	p< 0.001	p= 0.003

Table 3: Significant associations between childhood bowel symptoms and adult bowel symptoms (Blank cells indicate non significant association).

Childhood symptoms	**Adult bowel symptoms**	**Adult diet change or medication for constipation**	**Adult faecal incontinence**	**Adult predictable bowel routine**
Painful bowel actions often	p<0.001	p<0.001	p<0.001	p=0.031
Bowel actions like marbles	p=0.002	p<0.001	p<0.001	p=0.001
Only a few bowel action per week	p<0.001	p<0.001	p=0.001	p<0.001
Bowel medication	p<0.001	p<0.001	p=0.006	
Faecal soiling				

Interpretation of results

Current understanding of DES in childhood often attributes filling disorders in the bladder to secondary or compensatory changes that result from functional obstruction to micturition and or defecation. In response to on-going urethral lumen reduction, higher detrusor pressures and bladder wall thickening are observed and the symptoms of OAB (urinary urgency, urge incontinence, small volume high urge voiding) precipitated. The strong association of childhood urgency with adult detrusor and ano-rectal function supports a childhood influence on adult OAB and elimination dysfunction.

Concluding message

Childhood LUT dysfunction may have a negative impact on both bladder and bowel function in later life. This study has shown a link between two time points and justifies a further investigation that controls for co-morbidities such as parity and specific disease processes.