

## STRESS HYPERACTIVITY - ONE TYPE OF STRESS INCONTINENCE

### Hypothesis / aims of study

Stress Urinary incontinence (SUI) is usually diagnosed by clinical grounds. Leakage as a result of an abdominal effort is the key. Basically the mechanisms are poor urethral support or sphincter insufficiency. Nevertheless, leakage can occur after true detrusor contractions induced by sudden rises of abdominal pressure. Since they are involuntary contractions induced by several forms of stress we refer to it as stress hyperactivity (SH). The recognition of this mechanism is urodynamic and can have important pathophysiologic and therapeutic implications. We searched for this in an universe of incontinent women that had been submitted to a cystometry. The objective of the study was to assess the importance of this phenomenon as a cause of stress urinary incontinence. Local ethics committee was informed but no approval was needed.

### Study design, materials and methods

Common stress incontinence is observed in a cystometry as a leakage of fluid synchronous to cough or valsalva manoeuvre, depending on the underlying defect, pelvic or sphincteric. No detrusor contraction should exist preceding urine leak.

We reviewed 143 consecutive cystometries of women with a history of urinary incontinence with and without urgency. These examinations were performed during the year os 2008. We excluded patients less than 18 year old, with known neurologic disease, previous pelvic surgery and those who could not perform the voiding phase of the cystometry for whatever reason. 100 cases where then evaluated. We followed the ICS recommendations for urodynamic studies. Tracings were independently analysed by two observers. According to common practice the patients were asked them to cough and perform Valsalva manoeuvre after a bladder filling of 200 ml.

We registered involuntary contractions, contractions after cough and Valsalva and urine leakage synchronous with cough and Valsalva and synchronous with contractions. Since there is no definition of stress induced contractions we decided to consider only those arising within a second after the stress. Figures 1-3

### Results

Ages where comprised between 22 and 83 with a mean of 59 and a standard deviation of 12.

42% of women had detrusor hyperactivity being or not their cause of incontinence during the examination. 11% reported urgency without associated detectable detrusor contractions. We found 16% of patients with involuntary detrusor contractions within a second after cough or Valsalva (stress hyperactivity), and in 6% this was the mechanism of their leak (incontinence by stress hyperactivity).

A statistical association was found between stress hyperactivity and detrusor hyperactivity (involuntary detrusor contractions not associated with stress) using chi-square with a p of 0,018– table 1.

			Hyperactive detrusor		Total
			No	yes	
Stress hyperactivity	No	% among stress hyperactivity	53(63,1%)	31(36,9%)	84(100,0%)
	yes	% among stress hyperactivity	5 (31,3%)	11 (68,8%)	16 (100,0%)

### Interpretation of results

The condition of cough or other stress induced detrusor contractions is far from rare. They often cause incontinence that is clinically and by the patient perceived as common stress incontinence, even though the leak arises slightly later (less than a second) rather than being synchronous to the stress.

We need an urodynamic tracing to diagnose this condition.

The underlying pathophysiologic mechanism is less clear but most likely, sudden changes on abdominal/vesical pressure can induce urethro-vesical reflexes (1). Resulting detrusor contractions have been well proven (2).

Defective pelvic urethral support can lead to an open bladder neck facilitating this condition.

It is interesting to assess the relationship with detrusor hyperactivity suggesting common pathways.

Theoretically, these contractions could be controlled with antimuscarinics, but considering an anatomical ground, surgical correction of the pelvic support defect would be a more logical therapy. Certainly, mid urethral tapes are not the answer for this condition.

### Concluding message

Stress hyperactivity incontinence can be clinically confused with common stress incontinence resulting from defective sphincters or pelvic urethral support. Therapies are different. These few cases can account for some failures after placing a mid-urethral tape. Urodynamics only can recognize this entity. We find this condition as one more reason to perform a simple cystometry before deciding invasive stress incontinence treatments.

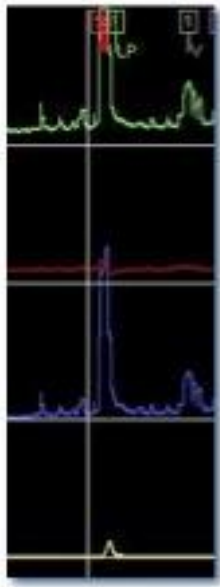


Figure 1 leak synchronous with cough

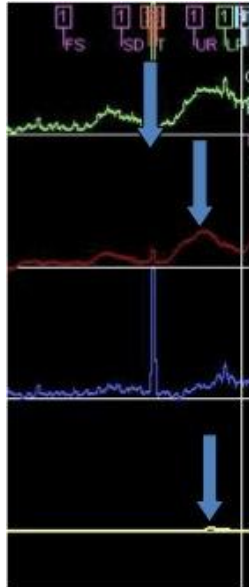


Figure 2 (spike-wave) cough induced contraction and leak

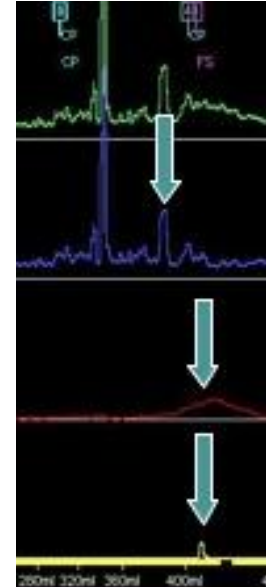


Figure 3 Valsalva induced contraction and leak

References

1. Shafik A, el-Sibai O, Ahmed I. Effect of urethral dilation on vesical motor activity: identification of the urethrovesical reflex and its role in voiding. J Urol. 2003 Mar;169(3):1017-9.
2. Jung SY, Fraser MO, Ozawa H, Yokoyama O, Yoshiyama M, De Groat WC, Chancellor MB. Urethral afferent nerve activity affects the micturition reflex; implication for the relationship between stress incontinence and detrusor instability. J Urol. 1999 Jul;162(1):204-12
3. Gustafson KJ, Creasey GH, Grill WM A urethral afferent mediated excitatory bladder reflex exists in humans. Neurosci Lett. 2004 Apr 22;360(1-2):9-12.

<b>Specify source of funding or grant</b>	<b>NONE</b>
<b>Is this a clinical trial?</b>	<b>No</b>
<b>What were the subjects in the study?</b>	<b>NONE</b>