EVALUATION OF STRESS URINARY INCONTINENCE IN FEMALES

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SUMMARY

20 patients with complaints of stress urinary incontinence (SUI) were studied. There were 6 controls. The study was mainly directed to ascertain the role of urodynamic and radiological evaluation of SUI to select cases of geniune stress urinary continence (GSUI) for surgical correction. Associated urinary symptoms like urgency and frequency were evident in more than 50% of cases. Epidemiologic scan showed 75 per cent of the cases as multipara and 85% had vaginal delivery. Nearly 25% were post-menopausal. 45% had associated prolapse though an overview of patients with genital prolapse revealed only 7.2% of cases having SUI. Stress cysto-urethrography revealed loss of posterior-urethro-vesical angle (PUV) in only 40% cases of SUI. The urodynamic parameters showed that uroglometry, cystometry and urethral pressure profilometry had all important role in identifying cases of GSUI. Detrusor instability was recorded in 30% of patients with SUI and excluded to spot out cases of GSUI. The surgery of GSUI after urodynamic evaluation achieved a 91.7 per cent success rate in this small series.

INTRODUCTION

A distressing problem, more common in women, SUI has been defined (Studd, 1990) as "involuntary leakage of urine from the urethra when the intravesical pressure exceeds the maximum urethral pressure in the absence of detrusor activity."

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Pregnancy, parturition trauma, surgery at bladder neck, congenital weakness or menopausal atrophy of sphincter mechanism are all alleged factors to precipitating SUI. Whatever may be the cause, the anatomical interrelationship between bladder, urethra and pelvic floor gets altered in SUI. Restoration of this interrelationship is the principle of surgery. Stress cystourethrography (SCU) helps to identify the type and degree

of alteration of posterior urethro-vesical angle (PUV) and urethral axis but with attendant limitations (Sutton, 1987). Dewhurst (1986) observed that simultaneous urodynamic study will help evaluation when it is clinically impossible to differentiate true stress from detrusor stress incontinence.

With a view to identify the anatomical defect as also the pathophysiology of bladder and urethra, radiological as also urodynamic evaluation of patients have been done to find out the diagnostic suitability of study protocol and institution of an effective therapy. An epidemiological study has also been done to correlate any causative factor so that prevention could be attempted.

PATIENTS AND METHODS

Twenty women with clinically demonstrable SUI were studied. There were 6 controls. An epidemiologic survey was made on age, parity, nature of childbirth, any associated prolapse and past surgery bladder neck of such patients. 10 patients had stress cystourethrography. Unfortunately. 'video cysto urethrography' was not available. All the 20 patients and 6 controls and urodynamic evaluation which included (a) water cystometry, (b) uroflowmetry, (c) urethral pressure profilometry and (d) sphincter electromyography. Cystoscopy was also done. Urinary tract infection was excluded at the very beginning.

This is a preliminary report of the continuing study programme in the Dept. of Obstetrics & Gynaecology and Department of Urology, I. P. G. M. E. & R and S. S. K. M. Hospital, Calcutta.

STUDY RESULTS

SUI was a complaint in 2.7% of women attending the Gynae. out-patient's department but on leading question it was found in approximately 10% of women. It was present in 7.2% of patients with genital prolapse.

Table I, II and III illustrate some of the epidemiologic factors. Table I shows that, of SUI women, 50% were in the age group of 20-30 years and only 25% were post-menopausal. It may be that older women accept SUI as a part of their old age "naturals" and report less for medical aid. This was all the more evident from a general O. P. D. surgery with leading questionnaire where only 5% in 16-35 years age group complained of SUI as against 25% in 36-65 years age group.

Table II shows that majority (75%) were multipara and 85% had vaginal delivery so that child-birth trauma to the bladder neck and sphincter mechanism could be a factor. But a primigravida who had a pre-labour elective C. S. also showed post-partal grade III SUI.

Table III shows that 45% of SUI women had genital prolapse (cystocele urethrocele/ uterine prolapse) in the present small series. In an overview of genital prolapse cases, it

Table I

Age group in cases with SUI

Age group (years)	20 - 30	31 - 40	41 - 50	51 - 65	Total
No. of patients	10	3	4 (2 PM*)	3 (all PM*)	20
Percentage	50%	15%	20%	15%	100%

*PM - post-menopausal

Table II

Analysis of parity & mode of delivery in SUI patients

Parity	Nullipara	Unipara	Multi (2 to 4)	Grandemulti (5 & above)	Total
No. of patients	Nil	5	9	6	20
Percentage	—	25%	45%	30%	

Mode of Chidbirth	FTND at Hosp. or health centre	FTND at home	Forceps	C. S.	Total
No. of patients	9	5 (all had prolapse)	3	3	20
Percentage	45%	25%	15%	15%	

was found that only 7.2 per cent of prolapse patients had SUI. Genital prolapse is thus rarely responsible for SUI. One patient developed grade III SUI following repair operation for prolapse with grade I SUI. Improper surgery at bladder neck was thus responsible for furthering her SUI.

80 per cent of patients had additional urinary symptoms (Table IV) and further evaluation was necessary.

Lateral standing stress cysto-urethrogram was obtained in 10 cases only. 40 per cent showed loss of PUV angle while another 40 per cent did not show any change though urodynamic study revealed them to be cases of GSUI (Table V).

Table VI illustrates the cystometry evalu-

Table III

SUI & genital prolapse

Nature of prolapse alone or in combination	SUI with prolapse (9 cases)	SUI without prolapse (11 cases)
	(45%)	(55%)
Cystocele/urethrocele	7	—
Only urethrocele	2	—
Rectocele	3	—
Uterine	1	—

Table IV

Additional urinary symptoms with SUI

(Total - 20 cases)

Symptoms	No. of cases	Percent
Urgency	10	50%
Frequency	10	50%
Dysuria	2	10%
No other complaint	4	20%

ation to exclude cases with unstable detrusor activity.

Table VI 14 out of 20 (70%) were cases of genuine SUI. But even in controls, there were cases of unstable detrusor.

Table VII shows the total urodynamic profile.

Certain valid observations could be made

Table V

Cysto-urethrography in SUI

Clinical diagnosis	-	20 cases
Radiological study	-	in 10 only
a) Positive change	-	4 (40%)
b) No change	-	4 (40%)
c) Not well visualised	-	2 (20%)

Table VI

Cystometrogram in SUI (20 cases)

	No. of patient	Percentage
S. U. I.		
Stable detrusor	14	70% of SUI
Unstable detrusor	6	30% of SUI
Controls :		
Stable detrusor	4	67% of controls
Unstable detrusor	2	33% of controls

Table VII

Urodynamic profile in 20 cases of SUI & 6 controls

	With SUI (20)		Controls (6)	
	Stable	Unstable	Stable	Unstable
No. of patients	14	6	4	2
Age (in years)	25 - 65	30 - 40	27 - 63	20 - 50
Uroflowgram :				
Max. flow rate (ml / Sec.)	13 - 27	9 - 25	18 - 26	11 - 25
Vol. voided (ml)	223 - 482	133 - 245	175 - 385	150 - 280
Residual Vol. (ml)	15 - 40	15 - 25	4 - 24	16 - 20
Cystometrogram :				
Vol. at 1st sensation (in ml)	68 - 160	40 - 234	100 - 150	140 - 226
Bladder capacity (ml)	238 - 522	148 - 270	179 - 409	166 - 300
Detrusor pressure (cms. of H_2O) during filling (60 ml / min.)	6 - 12	20 80	6 - 10	25 - 26
Urethral pressure profile (No. of cases)				
a) Negative	14	4	Nil	Nil
b) Positive	Nil	2	4	2
Sphinctrer EMG activity	Not Increased	Increased	Increased	Increased

Table VIII

In 12 out of 14 cases of GSUI

Operation	No. of cases	Result
Modified M. M. K. Operation	4 (Grade II - 2) (Grade III - 2)	All 4 cured (cent percent)
Kelly's Operation	8 (Grade I - 8)	Cured - 7 (87.5%) Failed - 1 (12.5%)

N. B. : • The failed Kelly's repair case had also associated Fothergill's operation now having Grade III SUI.

• Grading (Shortliffe et al, 1986)

from Table VI and Table VII. Cystometry, single parameter to exclude or confirm detrusor instability, was done in all cases. A detrusor pressure greater than 15 cm of water during filling and inappropriate detrusor contraction were considered indicative of unstable detrusor (Mundy et al, 1984 Studd, 1990) and hence important to spot out cases of GSUI. Other parameters were also considered for total evaluation. For example, a satisfactory bladder capacity and voided volume, low residual urine, FS at about 50-150 ml indicated stable bladder. In cases of GSUI, while excluding detrusor instability, the urethral sphincter mechanism must be deficient. An important diagnostic parameter in this respect was negative urethral closure pressure profile i.e., urethral closure pressure, even in absence of voiding, was lower than detrusor pressure. Sphincter EMG activity (with needle electrode to anal sphincter and comparable to urethral sphincter) was not found to increase in GSUI. An extremely high flow rate while suggested lowered urethral resistance, a low maximum flow rate indicated outflow obstruction or poor detrusor contractility - very important to exclude before any correlative surgery for SUI is undertaken. Cystoscopy revealed bladder neck/urethral obstruction in 2 cases (10%).

Table VIII shows the results of treatment in 12 out of 14 cases of GSUI. 11 of 12 cases of GSUI had successful surgery which reflects the value of urodynamic study.

COMMENTS

1. SUI is a rather frequent gynaecological complaint, more so in perimenopausal age group and parous women.
2. Genital prolapse is not a frequent association with SUI though, in SUI cases, prolapse in quite common.
3. Urodynamic study helps to exclude detrusor instability and find out cases of GSUI. All the urodynamic parameters are to be considered together to selected cases for successful surgery.
4. Cystourethrography is a technically difficult procedure. Moreover, a great percentage of GSUI cases show no anatomical abnormality reflecting inadequacy of the procedure.
5. Properly selected cases of GSUI show high success rate after reconstructive surgery.

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