frequency greater eight times a day associated with urgency or urge incontinence [1]. At present there is debate within the ICS about using the term "overactive bladder", a classification which has been proposed for use in the primary care setting for the prescription of anticholinergic therapy.

This study attempts to determine whether the "overactive bladder" is a useful term to select women for treatment and wheather the women selected can safely be initiated on treatment.

METHODS

All women were referred to the urodynamic clinic because of lower urinary tract symptoms. They underwent a clinical evaluation including complete history, vaginal examination, frequency-volume chart and videocystometrogram (VCMG). After uroflowmetry, the urinary residual was measured and the bladder filled at 100 ml/min with room temperature contrast medium. The bladder was imaged at maximum bladder capacity and provocative manoeuvres were undertaken. Finally a pressure-flow study was performed and the urinary residual measured. All terms and definitions are in accordance with International Continence Society (ICS). Women with symptoms consistent with an overactive bladder were chosen.

RESULTS

4500 consecutive women were studied. Only eight hundred forty three women (18.7%), who complained of frequency, nocturia, urgency and urge incontinence could be classified as having an overactive bladder. Four hundred and fifty seven women (54.2%) had detrusor instability, while 386 women (45.8%) had a stable urodynamic trace. Sixty eight (8.1%) of the women studied had voiding difficulties. The urodynamic diagnoses are shown in table 1. The post void residuals after the free flow rate at the beginning of urodynamics are displayed in table 2.

Genuine stress incontinence	*Pure Unstable bladder*	*Mixed incontinence*	*Voiding difficulties*	*Other*
176	**327**	**130**	**68**	**142**
20.8%	**38.8%**	**15.4%**	**8.1%**	**16.9%**

Table 1. Urodynamic diagnoses of the women with symptoms of an "overactive bladder".

One hundred and eleven women (13.3%) had a urinary residual greater than 50 ml and a few women (7) had urinary residuals greater than 400 ml.

Detrusor instability was diagnosed in 1857 women (41.6%) of the original 4500 women.

Post void residual	*< 50 ml*	*50 to 100 ml*	*100 to 200 ml*	*200 ml<*
N. patients	**732**	**42**	**49**	**20**
%	**86.7**	**5.2**	**5.9**	**2.2**

Table 2. Post void residuals after a free flow rate of the women with symptoms of an "overactive bladder"

CONCLUSIONS

The diagnosis of "overactive bladder" using urinary symptoms under diagnoses detrusor instability in a population of women suffering from lower urinary tract symptoms. Treatment for detrusor instability would be inappropriate in half of those women with the symptomatic diagnosis of "overactive bladder " and a significant minority of women have post-void urinary residuals greater than 100 ml (8.1%). Anticholinergic therapy in the later group may lead to urinary retention. The symptomatic diagnosis of overactive bladder is not recommended.

REFERENCES

[1] Kobelt G. Kirchberger I., Malone-Lee J. Review. Quality of life aspects of the overactive bladder and the effect of treatment with tolterodine. *BJU International* 83(6):583-90,1999.

4

Author(s): K H Moore[1], W Lynch[1], M A Hansen[2], J A Barden[2]

Institution, city, country:
The Detrusor Muscle Laboratory, St George Hospital, University of New South Wales[1], and the Protein Receptor Structure Laboratory, Institute for Biomedical Research, Dept of Anatomy & Histology, University of Sydney[2] Australia

Title (type in CAPITAL LETTERS, leave one blank line before the text):

ALTERED PURINERGIC RECEPTOR DISTRIBUTION IN THE DETRUSOR OF PATIENTS WITH SENSORY URGENCY AND REFRACTORY IDIOPATHIC INSTABILITY

AIMS OF STUDY: Functional, radioligand binding and autoradiographic studies indicate that purinergic binding sites exist in normal human detrusor, where excitatory purinergic receptors are of the P2X type. Recently, antibodies have been raised against $P2X_{1-6}$ subtypes in the laboratory [1].

Functional studies show that purinergic agonists evoke contractile activity in normal strips from human bladder cancer. In detrusor that exhibits atropine-resistant contractility, the residual non-cholinergic excitation was reversibly abolished following desensitisation with ",s-meATP. Recently [2], atropine resistant contractility has been shown *in vitro* in idiopathic detrusor instability (IDI) although this has not been investigated in sensory urgency (SU). Thus purinergic excitatory activity may have a role in the control of aberrant detrusor activity

Our aim was to employ subtype-specific P2X receptor antibodies in bladder biopsies from women with IDI and SU, in comparison with control tissue, to determine whether the distribution of purinergic receptor subtypes was altered in these two conditions. Small detrusor segments from children were also studied, to compare immature bladder with adult. Antibody against the synaptic vesicle proteoglycan SV2 was used to localise the purinergic receptor clusters in relation to parasympathetic neuronal varicosities.

METHODS: In patients with refractory IDI who had not responded to >2 anticholinergic drugs with bladder training for >12 months, and in patients with severe SU who failed to respond, cystoscopy was performed to exclude other abnormalities. Small bladder segments were taken from the (dome) cystotomy wound at operation for vesicoureteric reflux (VUR) in children age 6m-10y. Control samples were taken from normal bladder at cystectomy, or biopsies at check cystoscopy for previous malignancy, with Ethical Committee approval.

Detrusor was fixed in 4% paraformaldehyde in borate-acetate buffer (pH 9.5) for 1 hour, cryprotected by immersion in 30% sucrose for 24h before sections (30:m) were cut on a freezing microtome and labelled using previously published immunohistochemical procedures [1]. Sections were viewed on a Leica TCS NT UV laser confocal microscope with pinhole set at 1.0.

RESULTS: Biopsies from 4 patients from each of the categories: baby (6-9m), child (2-10y), normal adult, IDI and SU were obtained. SU cases had small volumes at first desire to void (mean 138mL, range 10-190mL) and small bladder capacities (mean 330mL, range 220-400mL), suggesting a disturbed afferent limb. In those with IDI, the mean max P_{det} was 45 cm H_2O, range 25-80.

SV2 immunoreactivity localised nerve varicosities in detrusor seen as elliptical puncta of about 1.2:m in diameter. The varicosities were then used as reference points to colocalise the P2X receptor subtypes to the detrusor innervation immediately at the sites of neurotransmitter release. In addition to these large P2X clusters, numerous smaller clusters, generally not colocalised with other subtypes and of size 0.4:m, were found distributed over the detrusor. In control adult and child bladders, these SV2 varicosities were colocalised with $P2X_1$, $P2X_2$, $P2X_3$, $P2X_4$, $P2X_5$ and $P2X_6$, as shown by strings of varicosities along the nerve fibres that stained with antibodies for SV2 and for each of these P2X subtypes. The percentage of P2X immuno reactive varicosities that were colocalized with the large SV2-labelled varicosities in normal tissue were: $P2X_1$ (96%, 411/427); $P2X_2$ (98%, 412/420); $P2X_3$ (92%, 361/394); $P2X_4$ (40%, 165/416); $P2X_5$ (82%, 318/388); and $P2X_6$ (39%, 148/379). These were collected in a minimum of 40 fields for each subtype with field sizes 25-150:m. The baby bladders revealed a clear pattern of detrusor innervation, shown by strings of SV2 labelled varicosities, but none of these large varicosities were co-labelled with any of the P2X subtypes with the exception of an occasional trace of $P2X_2$. Small scattered foci of P2X receptor immunoreactivity could be found in the vicinity of the nerve varicosities, perhaps in the process of assembling to form clusters adjacent to them. In detrusor from IDI, a unique labelling pattern was found with both $P2X_3$ and $P2X_5$ receptors being down-regulated completely (0/307 and 0/301 respectively) while the other subtypes were largely unaltered: $P2X_1$ (292/308); $P2X_2$ (304/312); $P2X_4$ (136/316); and $P2X_6$ (110/304). In detrusor from SU, all 6 purinergic receptor subtypes were largely absent from the varicosities stained with SV2: $P2X_1$ (5/122); $P2X_2$ (14/126); $P2X_3$ (2/120);

$P2X_4$ (8/118); $P2X_5$ (3/117); and $P2X_6$ (0/121). The SU and baby bladders exhibited very similar labelling patterns except that the density of the small P2X clusters unrelated to the SV2-labelled varicosities was much higher in the vicinity of the varicosities in SU as if they were being dissociated. The large numbers of small clusters of P2X receptors could be acting as autoreceptors in SU.

CONCLUSIONS: These results are the first indication of a selective down-regulation of $P2X_3$ and $P2X_5$ in IDI and an almost complete absence of purinergic nerve innervation in SU.

1. *Development of the distribution of single P2X homomeric and heteromeric receptor clusters on smooth muscle cells in relation to nerve varicosities in the rat urinary bladder J Neurocytol, 1999, 28, 3-15.*
2. *Spontaneous contractility, atropine resistance and response to the tachykinin antagonist SR48968 in idiopathic detrusor instability. Neurourol & Urodyn, 1999, 18, 373-374*

5A

Author(s):
R. Dmochowski
Institution, city, country:
Harris Hospital, Dallas TX, USA

Title (type in CAPITAL LETTERS, leave one blank line before the text): A MINIMALLY INVASIVE TECHNIQUE TO SHRINK THE ENDOPELVIC FASCIA FOR THE TREATMENT OF SUI: INITIAL SAFETY AND EFFICACY PROFILE OF TWO SURGICAL APPROACHES

Aims of Study: The goal of this study is to evaluate the initial operative safety and short and intermediate term efficacy of radio frequency (RF) bladder neck suspension for the treatment of female stress urinary incontinence (SUI). The approach reported here evaluated a minimally invasive technique for providing support to the urethrovesical junction utilizing radio frequency induced tissue changes without the use of implantable materials, sutures, staples, or mesh. A similar technique is used by orthopedic surgeons in shoulder and spine surgery to support and lift other anatomic structures.

Methods: Two parallel, independent, prospective IDE approved, multi-center comparative studies of RF treatment were conducted on women with genuine SUI confirmed by objective urodynamics. Two access methods were used: the first uses a standard extraperitoneal laparoscopic (LP) approach and the second a bilateral transvaginal (TV) approach. In both procedures, the endopelvic fascia (EPF) was visualized and an instrument (SURx, Inc., Pleasanton, CA) was used to apply the low power RF energy directly to the EPF. The EPF was observed to shrink as a result of the heat generated by the RF. Success and complication rates were noted and compared to published sources to determine the safety profile of this new procedure.

Results: Complication rates were noted and compared to the American Urological Association 1997[1] report on surgical options for incontinence. Success rates were determined by standard urodynamics, pad usage, voiding diaries and patient satisfaction scores.

Complication/Risk	Retropubic Suspension[1]	Sling[1]	TV (N=26)	LP (N=105)
Intra-operative (bladder, urethra perforation)	2%	3%	0%	2% ***
Transfusion	2	4	0	0
Retention (longer than 4 wks)	5	8	0	0
Comp. Requiring Surgery	2	3	0	0
Urgency	11	7	0	2
Wound Comp.	7	9	0	1
UT Infection	13	12	3	1
Total	42%	46%	3%	6%

Success Rate (%)	3 month	6 month	12 month
Transvaginal (TV)	78% (N =18)	100% (N = 10)	88% (N = 8)
Laparoscopic (LP)	80% (N =75)	80% (N = 61)	64% (N = 14) ***

*** No patients who have reached their 3 month follow-up interval have changed their continence status in subsequent follow-up periods. The lower 12-month success rate is due to initial physician learning curve and technique refinement. The two LP intraoperative perforations were due to difficult access and unrelated to the RF instrument.