252

Lee C[1], Jhang J[1], Jiang Y[1], Kuo H[1]
1. *Department of Urology, Buddhist Tzu Chi General Hospital and Tzu Chi University, Hualien, Taiwan*

THE POTENTIAL ROLE OF UROTHELIAL SENSORY PROTEINS IN PATIENTS WITH BLADDER OUTLET OBSTRUCTION AND DIFFERENT BLADDER DYSFUNCTIONS

Hypothesis / aims of study
Bladder outlet obstruction (BOO) may be induced by specific functional and anatomic causes. The resulting obstruction can induce significant alterations in the morphology and physiology of urothelium and detrusor muscles, which manifest with various bladder dysfunctions. The underlying mechanisms responsible for the bladder dysfunction in BOO remain poorly understood. The purpose of this study is to investigate the role of sensory protein expressions in patients with BOO.

Study design, materials and methods
We prospectively enrolled patients who had undergone an urodynamic study for LUTS. Based on their results, it was categorized into 4 groups: Control (no BOO), BOO with detrusor overactivity (DO), BOO with detrusor underactivity (DU) and BOO with hypersensitive bladder (HSB). Bladder biopsies taken from each patient were examined using western blotting in search of sensory receptors included eNOS, iNOS, P2X3, M2, M3 and β3. The results were compared against with urodynamic parameters.

Results
A total of 44 men were enrolled in this study. There were 34 patients presented with BOO (DO: 12, DU: 11 and HSB: 11). The expression of sensory proteins by western blotting was demonstrated in Fig.1. The distribution of M3 is significantly reduced in patients with BOO especially in those with HSB (0.685±0.333) ($p<0.000$). The β 3 signal in BOO with DU is significantly increased (1.353±0.499) and lowest in BOO with HSB group ($p<0.000$) (Table 1). Higher number of β3 expression is associated with delayed FSF and lower Qmax. A greater number in iNOS and eNOS is detected along with higher Pdet and larger PVR, respectively. P2X3 is associated with deferred FS whereas M2 is corresponding to increased Pdet.

Interpretation of results
LUTS secondary to BOO are associated with alteration in sensory receptors. Over expression or under expression of these sensory proteins could affect urodynamic parameters and might contribute to the pathophysiology of bladder dysfunction in BOO.

Concluding message
Alteration of urothelial sensory receptor expressions secondary to BOO may be responsible for the different bladder dysfunction.

Table 1. Expression of sensory proteins in control, BOO+HSB, BOO+DO and BOO+DU

	Control (N=10)	BOO+HSB (N=11)	BOO+DO (N=12)	BOO+DU (N=11)	P-value
eNOS	0.094±0.088	0.126±0.144	0.113±0.061	0.076±0.058	0.628
P2X3	0.097±0.109	0.287±0.175	0.211±0.106	0.275±0.299	0.103
M2	0.405±0.303	1.113±1.667	1.036±0.521	0.541±0.468	0.207
M3	1.593±0.708	0.685±0.333	0.721±0.298	1.025±0.315	0.000
iNOS	0.258±0.325	0.268±0.540	0.174±0.182	0.062±0.039	0.474
β3	0.878±0.584	0.820±0.316	0.904±0.225	1.353±0.499	0.024

Table. 2 Correlation between urodynamic parameters with sensory receptors expression

		β3	iNOS	eNOS	P2X3	M2	M3
FSF	Pearson	.616**	-.089	.027	-.031	.060	-.047
	p	.000	.623	.878	.864	.737	.791
FS	Pearson	.286	.000	-.002	.432*	-.188	.323
	p	.106	.999	.993	.011	.287	.063
Pdet	Pearson	-.131	.442*	.264	-.093	.499**	-.267
	p	.492	.015	.152	.620	.004	.146
Qmax	Pearson	-.380*	.054	.252	-.103	.111	-.347*
	p	.029	.765	.151	.563	.531	.044
Vol	Pearson	.288	-.114	-.098	-.237	-.205	.212
	p	.110	.535	.587	.185	.253	.237
PVR	Pearson	-.280	.186	.540**	-.032	.513**	-.029
	p	.114	.301	.001	.856	.002	.870

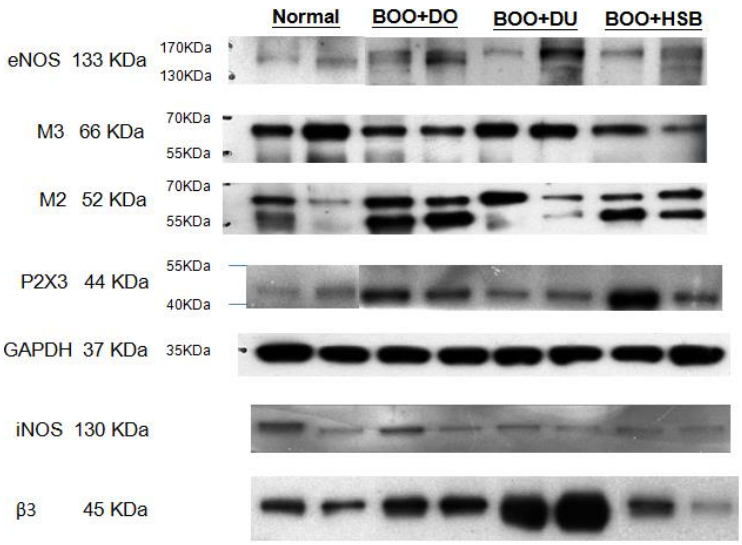

Fig.1. Expression of sensory proteins eNOS, iNOS, M3, M2, P2X3 and β3 in BOO patients with different bladder dysfunctions.

Disclosures
Funding: NONE **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Research Ethics Committee **Helsinki:** Yes **Informed Consent:** Yes