STUDY ON ESTROGEN RECEPTORS (ERα AND ERβ) IN TISSUES AROUND LEVATOR ANI MUSCLES OF FEMALE STRESS URINARY INCONTINENCE.

Hypothesis / aims of study
To study the estrogen receptor α and β (ERα and ERβ) expression in levator ani muscles (LAM) of patients with stress urinary incontinence (SUI) and to explore its relation with SUI.

Study design, materials and methods
The biopsy specimens of LAM were obtained from 26 subjects of SUI undergoing hysterectomy and tension-free vaginal type procedures. Twenty-one control specimens were obtained also. The histological structures around LAM were examined with routine HE staining. The ERα and ERβ expression in pelvic floor structure were detected by immunohistochemical staining and western blotting.

Results
(1) Positive biopsy rate of tissue around LAM in SUI group was less than that in controls, and positive biopsy rate of postmenopausal SUI group was significant less than the premenopausal (P<0.01). There was no significant difference in positive biopsy rate between premenopausal and postmenopausal control women (P>0.05). (2) Serum estradiol level of premenopausal SUI group was significantly less than the controls (P<0.05). (3) There was no ERα and ERβ expression in the LAM of specimens. (4) ERα positive stained positively in the tissue around LAM. Positive expression rate of ERα in the tissue around LAM was lower in SUI group and postmenopausal group (P<0.05). (5) There was no significant difference in ERβ expression in the tissue around LAM between premenopausal and postmenopausal control group (P>0.05). (6) Western blotting demonstrated that ERβ expression lower than ERα in tissues around LAM. ERα and ERβ expression in SUI group was lower than the control group.

Interpretation of results
(1) Our data showned that the thicknesses of pelvic muscle and contracting muscle were degraded with age. The lower biopsy rate of SUI group also indicated that SUI women had weak muscle fiber, low skeletal muscle component and connective tissue replacement of levator ani muscle. (2) From our data, serum estradiol level was lower in postmenopausal women and premenopausal SUI women, suggested that SUI of premenopausal women must have relation with lower serum estrogen. (3) Our data illustrated that there was no ERα expression in levator ani muscles. It may suggest that levator ani muscle was not the direct target organ of estrogen, and estrogen may have effect on levator ani muscle cell in some other way. (4) It seemed that lower serum estradiol level and expression of ERα acted to depress regulating function of estrogen on pelvic fascia tissue, recessive of pelvic fascia tissue and function of levator ani muscle covered by it. The positive expression rate of ERα in SUI, suggested that ERα had different way to introduce estrogen regulation of functional gene in target cell. It meant that ERα played an important role in etiology of SUI. Also, ERα possibly played a different function of occurrence of SUI. The lower ERα in the tissues around levator ani muscle of SUI women may be the reason that estrogen replace treatment was not effective for SUI.

Concluding message
Pathogenesis of premenopausal SUI had relation with lower serum estradiol level. There was significant correlation between the expressions of ERα and SUI. There was also significant correlation between the positive expression rate of ERα and ERβ may play different functions in occurrence of SUI.

References