

all groups. The surgical procedure was performed after 5 h of CYP administration in group II and after 24 h of the 4thCYP dose administration in group III. Saline solution was infused at a rate of 0,046 ml/min. continuously into the bladder. The measurements in each animal represent the average of 5 bladder micturition cycles, after obtaining repetitive voiding. We recorded: BP (basal pressure), PT (threshold pressure), MVP (micturition voiding pressure), ICI (intercontraction interval), Compliance, fBC (functional bladder capacity), MI (motility index), DI (detrusor index) and DOI (detrusor overactivity index). Moreover we calculated MI (motility index) in 10-minutes intervals. In addition we analysed DI (detrusor index) in group I and DOI (detrusor overactivity index) in group II and III.

Results: After acute and chronic CYP administration we observed respectively significant decrease of MVP (21.5% in both groups), ICI (69.2% or 58.2%), fBC (69.4% or 58.3%). Also increase of BC (200% or 133%), DOI (580% or 200%), MI (76% or 38%). Compliance was significantly decreased (45.5%) only in chronic OAB. Significant changes between CMGs parameters in acute and chronic OAB were only concerned with detrusor overactivity characterized by DOI.

Conclusions: In summary, our present findings show that acute and chronic "chemical" CYP-induced cystitis lead to the overactivity of urinary bladder in rats. We have found no significant differences in basic CMGs parameters, such as BP, PT, MVP, ICI, fBC, Compliance in rats with acute or chronic OAB models. Our current results prove that both models are equally credible for cystometric evaluation.

Poster Session 4: Overactive bladder, Incontinence, Prostatitis, Miscellaneous

Friday, 11 September 2009, 14:50-17:00

Poster room 1

N47

Urodynamic effects of the bladder C-fiber afferent activity modulation in chronic overactive bladder model rats

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Introduction and Objectives: The pivotal backgrounds for overactive bladder (OAB) development are as follow: the C-fibres sensitisation (increment of sensitivity to various stimuli acting on urotelium) and local effector function of afferent C-fibres endings leading to neurogenic inflammation. Considering the polymodal features of afferent C-fibre we explored the urodynamic effect of primary afferent neurons modulation on detrusor activity in normal and overactive bladder model rats.

Material and Methods: Experiments were performed on 48 female rats. OAB was induced by cyclophosphamide (CYP) – 75 mg/kg i.p., every 3rd day for 7 days. Animals were divided into 6 groups:

- I. control,
- II. OAB,
- III. OAB + capsaicin (CAP),
- IV. OAB + lidocaine (LDK),
- V. CAP,
- VI. LDK.

Cystometry was performed under urethane anaesthesia (1h after catheter implantation, infusion rate – 0.046 ml/min.), after 24h of the 4thCYP dose in group II, after 24h of the 4thCYP and CAP in group III, after 24h of the 4thCYP within 30 min. after LDK in group IV, after 24h of the CAP in group V, after 30 min. of the LDK in group VI. 1mM CAP or 2% LDK were instilled at a

rate of 0.15 ml/min. and left contact with the mucosa for 15 and 30 minutes, respectively. The measurements in each animal represent the average of 5 bladder micturition cycles, after obtaining repetitive voiding. We recorded: BP (basal pressure), PT (threshold pressure), MVP (micturition voiding pressure), ICI (intercontraction interval), Compliance, fBC (functional bladder capacity), MI (motility index), DI (detrusor index) and DOI (detrusor overactivity index).

Results: CYP leads to decrease of MVP, ICI, fBC and compliance. Also increase of BP, DI, MI were observed. CAP produced complete inhibition of detrusor contractility. We observed a phasic detrusor contractions of low amplitude with accompanying increased intravesical pressure. As a consequence of the lack of periodically generated MVP and incomplete bladder emptying, constantly lasting urine retention occurred. In case of critical bladder fulfil achievement we recorded constant, dripping flow of urine through the urethra. Contrary, LDK leads to increase of ICI, compliance, fBC and DI. CAP and LDK reduced the severity of OAB, leading to the improvement of cystometric parameters. Compared to rats with chronic OAB we observed, increase of ICI, fBC, compliance. Also decrease of DOI and MI were observed. Surprisingly, MVP was higher after LDK, compared to control animals with chronic OAB.

Conclusions: CYP-induced cystitis leads to the OAB in rats. The modulation of C-fibres activity by CAP and LDK reduces the severity of detrusor overactivity in rats with chronic OAB, and improve its urodynamic estimation. This observations confirm the hypothesis, that in pathophysiology of overactive bladder the pivotal role play two types of unmyelinated bladder afferent C-fibres, both capsaicin-sensitive and capsaicin-resistant.

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Alterations in urinary bladder histological structure and mast cells activity following overactive bladder in rats

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Introduction and Objectives: Cyclophosphamide (CYP) damages all mucosal defence lines of urinary bladder and induces chemical cystitis leading to overactive bladder (OAB). The aim of this study was to estimate the effect of CYP on bladder wall architecture, as well as inflammatory cells and mast cells activity.

Material and Methods: Twenty four female Wistar rats were randomly divided into four equal groups: I – control, II – acute OAB, III – chronic OAB, IV – sham group. Acute and chronic OAB were induced by CYP in single dose (200 mg/kg ip.) and four doses (75 mg/kg ip. every 3rd day for 7 days of experiment), respectively. All animals were sacrificed by pentobarbital overdose. After bladder removal, thin sections were cut and stained with hematoxylin and eosin for histological assessment and with toluidine blue for mast cells evaluation. In each fragment 10 consecutive cross sections were examined. The severity of inflammation was examined according to 4 criteria (mucosal abrasion, hemorrhage, leukocyte infiltration and oedema). In addition, the total number of mast cells was counted at 200× magnification.

Results: The CYP-treated rats exhibited macroscopical signs of urinary bladder inflammation, i.e. redness, oedema (in group II, III) and also wall thickening, mucosal erosions, ulcerations, petechial hemorrhages on the serosal surface (in group III). In some animals of the group III the urine contained blood. Rats in the groups I and IV had healthy bladders and normal urine. Microscopic evaluations of acute and chronic

OAB walls revealed increased severity of inflammatory cells infiltration of bladder wall (neutrophils and mononuclear cells). Compared to the control group, a single dose of CYP caused increased activity of mast cells. However, chronic administration of CYP suppressed the activity of mast cells within bladder wall. Furthermore, CYP-treated rats showed clear signs of inflammation; however the alteration of bladder histological structure depends on the mode of CYP administration. Acute model caused more severe mucosal abrasion compared to chronic one which revealed more developed haemorrhage changes within bladder wall. Additionally, in acute and chronic OAB we observed similar tissue oedema changes. Optional comparison bladder histological architecture and hyperemia degree between rats after (group I) and without (group IV) bladder catheter implantation showed no significant changes.

Conclusions: CYP induces chemical cystitis with alteration in histological structure and inflammatory cells activity. The suppression of mast cells in chronic OAB seems to be a result of direct cytotoxic effect of CYP, as well as stems from a decrease of peripherally (within bladder) substance P release by afferent C fibres endings. Our results prove that acute model of CYP-induced cystitis in rats is more credible for further evaluation of neurogenic inflammation response in overactive bladder.

N49

Male sling operations in male urinary incontinence

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Introduction and Objectives: To assess the efficiency of the male sling operations in male urinary incontinence cases.

Material and Methods: A total 21 patients who had undergone male sling operation with urinary incontinence between January 2004 and April 2008 were enrolled to the study. Etiologic factors were radical prostatectomy in 14, TUR prostatectomy in 4, transvesical prostatectomy in 2 and traumatic urethral rupture in 1 patient. Bone sling and suprapubic sling techniques were performed to 13 and 8 patients, respectively. As sling material, we used prolen mesh in 20 patients and rectus fascial graft in 1 patient who had undergone suprapubic sling technique. In postoperative follow-up daily pad number, uroflowmetry, postvoiding residual urine volume were assessed and UCLA/RAND examination system was used to determine the patients' satisfaction.

Results: All patients were asked to urinate in the postoperative second day. All patients who had undergone bone sling operation urinated easily, but in 2 patients who had undergone suprapubic sling procedure acute urinary retention developed. These two patients urinated easily after the suprapubic sutures were loosened. Complete urinary continence was achieved in 17 patients (81%), whereas minimal urinary incontinence was observed in 4 patients (19%), postoperatively. The cure rates at third month and at first year follow-up were 72.7% and 66.7%, respectively. According to UCLA/RAND examination system 66.7% of the patients were satisfied with the operations, whereas 33.3% of them were not.

Conclusions: According to our clinical experiences, male sling operation seems to be a very effective surgical procedure for the male urinary incontinence and it has high success rates especially in the mild and moderate urinary incontinence cases.

N50

Associations between lower urinary tract symptoms and semen quality in ageing male

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Introduction and Objectives: Men's increasing mean life expectancy accompanied by a trend towards higher paternal age and developments in assisted reproduction have raised interesting age-related aspects of male fertility. Several studies have recently indicated that lower urinary tract symptoms may potentially increase a risk of reduced fertility in men. The aim of this study was to investigate the relationships between semen quality and lower urinary tract symptoms (LUTS) in ageing male.

Material and Methods: A total of 210 men (aged 45-67) were investigated in this study. Clinical examination included body composition, prostate screening, genital pathologies and testicular size measured by orchidometer. All subjects filled out the International Prostate Symptom Score (I-PSS) and Chronic Prostatitis Symptom Index (NIH-CPSI) questionnaires for lower urinary tract and prostatitis-like symptoms. Blood samples were collected for hormonal, biochemical and organ-specific markers. All men were measured for total prostate volume (TPV) by transrectal ultrasonography and for urinary flow rates by uroflowmetry.

Results: The sperm concentration (median 84×10^6 per milliliter for all investigated men) showed a negative correlation with total prostate volume ($r = -0.233$, $p = 0.00292$). The motility of spermatozoa showed a negative correlation with IPPS ($r = -0.181$, $p = 0.0211$), NIH-CPSI pain score ($r = -0.153$, $p = 0.0489$) and us-CRP level in serum ($r = -0.252$, $p = 0.00126$). The volume of ejaculate showed a negative correlation with WBC counts in semen ($r = -0.243$, $p = 0.00182$), with PSA ($r = -0.197$, $p = 0.012$) and us-CRP level in serum ($r = -0.176$, $p = 0.0251$). Testicular size showed a positive correlation with sperm concentration ($r = 0.251$, $p = 0.00126$) and sperm motility rates ($r = 0.169$, $p = 0.0317$).

Conclusions: Our preliminary results suggest that semen pathologies and reduced fertility rates may be associated with LUTS and prostate diseases in ageing male. However, the future research should directly define the relationships between semen quality and LUTS as well as examine the treatment effect of LUTS to fertility rates in ageing male.

N51

Prevalence of asymptomatic inflammatory prostatitis in ageing male with lower urinary tract symptoms

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Introduction and Objectives: Asymptomatic inflammation as new category of prostatitis is often found during evaluation of other reproductive and prostate disorders. The aim of this study was to determine the prevalence of asymptomatic prostatitis in ageing male with lower urinary tract symptoms (LUTS).

Material and Methods: A total of 132 men (mean age 58.9 ± 6.7 years) with LUTS (mean I-PSS 10.4 ± 6.4) were investigated for white blood count (WBC) in expressed prostatic secretion (EPS) and post-prostatic massage urine specimen. Subjects with any clinical symptoms of inflammation were excluded. Total prostate volume, urinary flow rate and certain organ-specific, hormonal and biochemical markers were measured as well. Subjects