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ABSTRACTS

POSTER PRESENTATIONS

P1-1

Hormonal evaluation in normal chinese men at middle and old age

Thomas I.S. Hwang, Otis Kuo-Wei Yin¹, Yeh You Shen¹, Ginger Jiin Shium Chen¹

Division of Urology, Department of Surgery,

¹Department of Nuclear Medicine, Shin Kong WHS Memorial Hospital

It is widely recognized that significant hormonal alternations occurred in aging men. However, there is a great deal of controversy about the value of hormonal determinations in the absence of clinical manifestations. In contrast, conclusive diagnosis of adult hypogonadism is difficult to reach on a purely clinical basis and always demands biochemical confirmation.

Aim: To determine the age-specific range of sex-related hormones in normal Chinese men.

Materials and methods: 159 subjects visited this hospital for physical check-up. Blood samples were drawn before any other examination. The testosterone,

free testosterone dehydroepiandrosterone (DHEA), dehydroepiandrosterone sulfate (DHEAS) and leptin were examined by radioimmunoassay. The reagents used are products of Elecsy^R (testosterone), DSL^R (free testosterone), Immunotech^R (DHEA, DHEAS) and Linco^R (leptin). The data were categorized at 10-year age ranges and comparisons were conducted.

Results: (See below)

Conclusion: According to our preliminary data, the serum testosterone level is not correlated well with age. In contrast, the serum free testosterone, DHEA and DHEAS become lower with the increasing age.

Age	Testosterone (ng/ml)	Free testosterone (pg/ml)	DHEA (ng/ml)	DHEAS (µg/ml)	Leptin (µg/ml)
40-49 (n=56)	5.40±1.44	12.0±2.6	5.34±3.4	178.6±73.0	5.10±2.51
50-59 (n=40)	6.17±2.20	11.4±3.1	3.08±2.31	109.5±67.2	5.44±4.00
60-69 (n=35)	4.88±1.33	8.7±1.2	2.48±1.62	102.3±52.1	5.12±2.01
70-79 (n=28)	5.81±2.16	5.8±2.4	1.64±1.14	37.3±15.5	4.30±3.01

P1-2

Clinical evaluation of relation between serum testosterone and cavernosal hemodynamics

Minoru Koga, Hiroshi Kiuchi, Yukiomi Namba, Masami Takeyama, Sompol Perpongkosol, Tohru Takahashi, Akira Tohda, Akira Tsujimura, Kiyomi Matsumiya, Akihiko Okuyama.
Osaka, Japan

Introduction and aim: Androgens are essential in the maintenance of libido and have an important role in regulating erectile capacity in man. Recently, androgens were shown to be associated with impaired relaxation of cavernous smooth muscles, since the resistive index (RI) value on dynamic-color duplex ultrasonography (D-CDU) had a strong correlation with the free testosterone (FT) level. The objective of this study is to evaluate the relation between serum testosterone and cavernosal hemodynamics.

Methods: Fifty-four impotent patients were subjected to hormonal screening and D-CDU. Flow parameters included peak systolic velocity, end diastolic velocity and RI. The patients were divided into three groups according to the RI values. Group 1 ($n=13$): $RI < 0.75$ (considered as having veno-occlusive dysfunction), Group 2 ($n=25$): $RI < 0.9$ and Group 3 ($n=16$): $RI > 0.9$ (considered

as normal).

Results: The total testosterone (TT) levels were 4.4/1.2 ng/ml in Group 1, 5.6/2.4 ng/ml in Group 2 and 4.6/1.4 ng/ml in Group 3. They did not show any significant differences by the Kruskal-Wallis rank test ($P=0.28$). The FT levels were 14.5/4.8 pg/ml in Group 1, 15.1/3.9 pg/ml in Group 2 and 14.4/5.1 pg/ml in Group 3. There were also no significant differences ($P=0.62$). However, RI values were demonstrated to have an inverse association with aging ($P=0.015$), while FT levels did not ($P=0.77$).

Conclusion: In contrary to previous reports, we could not demonstrate any significant differences in this study. However, we cannot deny the correlation between the androgens and the RI values as the number of this study is small. Further study is required.

P1-3

Penile prosthesis: triad survey (couple + doctor)

Juan P. Vanegas, Jose M. Fidalgo de Matos
Feira, Portugal

Introduction and aim: Before introducing Sildenafil in the treatment of erectile dysfunction (ED) Penile Prosthesis, although being the most invasive treatment, has been used with considerable satisfaction rate. We present our experience with the implantation of maleable penile prosthesis (MPP) as an alternative in the treatment of ED in a group of patients with high success rate and quality of life.

Methods: Between 1991 and 1998, 20 organic impotent patients (mean age 65 years) underwent penile prosthesis implantation. 11 MPP implanted were AMS 650 and 9 were AMS 600. Of the 20 patients 6 had penile curvature, 4 were diabetic, 1 impotence after radical cistoprostatectomy for bladder carcinoma and 1 after radical prostatectomy for prostate cancer. The other 8 patients presented penile doppler ecography compatible with venous leak. We review the complications (infection

and removal) and follow up including satisfaction rate.

Results: After a follow up of nearly 10 years, 3 out of 20 patients had prosthesis removed in the postoperative period due to infection. In 2 of these 3 patients only 1 cylinder of the prosthesis was removed and in the other one the whole MPP. The rest of the patients are satisfied and have normal sexual intercourse according to them and their partners. Even the 2 patients that suffered removal of one cylinder of the prosthesis can perform penetration and sexual intercourse.

Conclusion: With oral therapy the trends in treatment for ED have been changed. With the aging of the male population there is still a place for MPP because although invasive, it is a good and cheap treatment for ED that gives good quality of life for patients who demand a definitive treatment

P1-4

The clinical efficacy of topical agents for premature ejaculation

Hyun Jun Park, Hong Gu Ha, Geom Su Oh, Nam Cheol Park

Department of Urology, College of Medicine, Pusan National University, Pusan, Korea

Aim: Penile hypersensitivity is one of the complicated causes of premature ejaculation and penile dorsal neurectomy and local anesthesia have been used for its treatment. The authors compared the clinical efficacy of various kinds of OTC topical agents which were designed for premature ejaculation and were approved of selling in Korean market.

Methods: 10 normal adult male, aged 24 to 29 (average 33.4) years were enrolled in this study. 7 topical agents of cream type, such as SS-cream, gel type such as Power gel, B.M. gel, BIGTO gel and Control gel, solution type such as E.L.T solution, and spray type such as Sanova, were employed. With the exception of SS-cream, which was a natural medicine, the rest of them were prepared from lidocaine 9.6%. We evaluated their characteristics, efficacy, satisfaction and adverse reactions.

Results: In regard to the odor, the SS-Cream was the strongest ($P<0.05$). The viscosity was the highest in the cream-type agent as SS-cream. However, washing off after sexual intercourse is relatively easy in every case. The E.L.T solution possesses the lowest necessity for washing ($P<0.05$). The main causes of noticing the us-

age of drugs by the partners were the delay in ejaculation time, feeling of foreign body and the odor. The revelation time for drug effect was about 15 to 20 min in most cases, while it is 60 min for the SS-cream. The adequate duration of drug efficacy is similar different among these drugs. The times of usage per one pack was more for E.L.T. solution, which was a make-up compact type, and for Sanova, which was a spray type than the rest of drugs which were contained in disposal packs or tubes. The E.L.T solution and Sanova were more convenient for use ($P<0.05$). The E.L.T. solution had the excellent satisfaction and convenience of use ($P<0.05$). Skin stimulation was the only adverse reaction, which was 70% in both Sanova and Control gel ($P<0.05$).

Conclusion: Topical agents designed for premature ejaculation are safe and effective medical treatment with no significant difference in the characteristics, efficacy and adverse reaction among them. Therefore, we suggest that the most important factors influencing their selection are the preserving container and the method of application.

P1-5

Surgical correction of Peyronie's disease with plaque incision and saphenous venous graft

Chien-Chih Wu, Wing-Ming Lai, Man-Ho Ho, Yi-Kuang Chen, Han-Sun Chiang
Department of Urology, Taipei Medical University Hospital, Taipei, China

Introduction: Fibrotic plaque associated with penile curvature, which affects the erectile function is the main manifestation of Peyronie's disease. The etiology for Peyronie's disease is not well defined, nevertheless several kinds of treatment are used with varying degrees of success, including oral medication, intralesional injection therapy and surgical correction. We evaluated the result of surgical correction for the Peyronie's disease with a technique of plaque incision followed by saphenous vein grafting.

Materials and methods: Four patients with symptoms of fibrotic plaque associated with penile curvature were enrolled in our study. Surgical correction procedure was performed with a technique of 'H' shape plaque

incision followed by a venous graft covering. The venous graft was from the saphenous vein.

Results: The patients received regular follow up in our out-patient clinic for up to one year. In 3 of the 4 patients, the penile curvature was restored to straightness. The other one had residual curvature of 15 degrees. Penile narrowing was noted in 2 patients. All of the patients resumed satisfactory penile erection after the surgery.

Conclusion: More case evaluation and long term follow up are needed. However, the venous graft is an effective substitute in our preliminary result, and hence could be highly encouraged to be used for the correction of penile curvature in Peyronie's disease.

P1-6

Involvement of GABAergic neurons in abnormal synaptic transmission in the hippocampal CA1 neurons of the castrated male mouse

Koichi Sakata, Akihiko Tokue, Nobufumi Kawai
Department of Urology and Physiology, Jichi Medical School, Tochigi, Japan

Aim: Hippocampus is one of the forebrain loci participating in the central regulation of penile erection. To determine the effect of castration on hippocampal function, we investigated the synaptic transmission in castrated male mice in vitro by using slice preparations from the hippocampus.

Methods: Male 12 weeks-old mice were divided into 3 groups: the sham-castration (Control), the castration (Cast) and the castration plus testosterone propionate (Cast+TP). Field excitatory postsynaptic potentials (fEPSP) were evoked in the CA1 area of the hippocampus by stimulating the Schaffer collateral/commissural fibers in slice preparations.

Results: Paired pulse facilitation (PPF) of the fEPSP with short inter-stimulus intervals was significantly suppressed in the Cast group. This suppression was reversed by testosterone injection (Cast+TP), and tend to be re-

versed by bicuculline, a GABA α antagonist or phaclofen, CGP55845A, a GABA β antagonist added to the perfusing solutions. Long-term potentiation (LTP) in the CA1 pyramidal neurons by high frequency stimulation did not differ significantly between the three experimental groups, whereas potentiation evoked by primed burst stimulation (PBS) was much weaker in the Cast group compared to the Control group. Testosterone injection restored the PBS-induced potentiation to the control level, and tended to reverse the potentiation by bicuculline, phaclofen or CGP55845A added to the perfusing solutions.

Conclusion: Altered synaptic transmission in the castrated male mice is caused by facilitation of GABAergic neurons that are influenced by testosterone.

Keywords: gabaergic neuron; hippocampus; castration, testosterone

P1-7

Vardenafil demonstrated similar efficacy and tolerability among older and younger patients with marginal differences in PK characteristics between age groups

Christopher P Steidle, Hartmut Porst, Alan Hollister, Thomas Segerson

Fort Wayne, IN, USA

Erectile dysfunction (ED) affects all age groups but especially the older population. Vardenafil was evaluated in a Phase II at-home study which was analyzed according to the age groups. A separate Phase I study compared pharmacokinetic (PK) data in older and younger men.

In the Phase II study, men with mild to severe ED for >6 months were randomized to placebo or 5 mg, 10 mg or 20 mg vardenafil, on-demand, and the efficacy was evaluated by the International Index of Erectile Function (IIEF). The responses of patients aged <45 ($n=134$) were compared with those aged >65 ($n=65$).

In the PK study, healthy male volunteers aged 18 to 45 ($n=9$) and aged >65 ($n=9$) were given a single oral dose of 40 mg vardenafil and the safety, tolerability and PK-parameters were determined.

For the Phase II study, the mean erectile function

domain score increased for all vardenafil groups. The mean changes from baseline for subjects <45 yr were 1.1, 7.9, 8.4 and 8.1 for placebo, 5 mg, 10 mg and 20 mg, respectively. For patients >65 yr, the corresponding increases from baseline were 0.5, 2.5, 7.8, and 10.3. Adverse events (AEs) >5% were headache, flushing, dyspepsia with no consistent differences between age groups.

For the phase I study, C_{max} and AUC_{0-t} were 134% and 152%, for the older men compared to the younger. AEs were primarily headache, rhinitis, nausea, dyspepsia and flushing with no clear differences between age groups.

These studies show that older men had comparable improvements in IIEF scores to younger men with slightly higher plasma levels.

P1-8

Vardenafil for erectile dysfunction –RigiScan™ assessment of efficacy

Theodor Klotz, Gabriele Rohde, Stefan Stark, Georg Wensing
Cologne/Erlangen, Germany

Vardenafil is a new PDE5-inhibitor under development for erectile dysfunction (ED). To investigate the efficacy of vardenafil, the penile response to visual sexual stimulation was determined in RigiScan™ studies.

In two randomized, double-blind, placebo-controlled, three-fold cross-over trials, 42 men with ED received single oral doses of 10 mg and 20 mg vardenafil or 20 mg and 40 mg vardenafil. The efficacy of vardenafil was measured by RigiScan™ penile plethys-mography.

Study I: The mean duration of rigidity >60% at the penile tip was 17.1 min in patients on placebo, 39.2 min ($P=0.004$) on 10 mg and 44.6 min ($P<0.001$) on 20 mg vardenafil. Mean rigidity activity units (RAU) at the penile tip were 16.6 for placebo, 33.1 ($P=0.007$) on 10mg and 43.0 ($P<0.001$) on 20mg vardenafil. Mean tumescence activity units (TAU) at the penile tip were 8.1 on placebo, 17.9 ($P=0.011$) on 10 mg and 19.1 ($P=0.006$) on 20 mg vardenafil.

Study II: The mean duration of rigidity >60% at the penile tip was 12.8 min in patients on placebo, 48.7 min ($P<0.001$) on 20 mg and 48.7 min ($P<0.001$) on 40 mg vardenafil. The mean duration of rigidity of >80% at the penile tip was 5.2 min on placebo, 18.5 min ($P<0.001$) on 20 mg and 22.6 min ($P<0.001$) on 40 mg vardenafil. Similar effects were observed for RAU, TAU and all parameters at the base of the penis ($P<0.001$ for all variables).

Adverse events were generally mild.

Vardenafil showed significantly greater response than placebo on all erectile measures: duration of rigidity, rigidity, degree of tumescence. An overall dose-dependent effect was observed for increased erectile responses across both studies. Single dose oral administration of 10 mg, 20 mg or 40 mg vardenafil was safe and well tolerated in men with ED.

P1-9

Pharmacokinetics of vardenafil in the elderly and subgroup data on efficacy and safety in elderly patients with erectile dysfunction

Christopher P Steidle, Richard A Feldman, Thomas Segerson, Alan Hollister
Fort Wayne, IN, USA

Erectile dysfunction (ED) affects the older population as well as younger adults. We report a pharmacokinetic (PK) and a Phase-II at-home study with the new selective PDE5 inhibitor vardenafil in older and younger men.

PK parameters were determined in healthy male volunteers (9 young: 18 to 45 y; 9 aged: >65 y) after a single oral dose of 40 mg vardenafil. In the Phase-II study, men with mild to severe ED (>6months) were randomized to take placebo, 5 mg, 10 mg or 20 mg vardenafil on-demand and efficacy was evaluated by the International Index of Erectile Function (IIEF).

In the PK study, C_{max} and AUC were 34% and 52% greater respectively for the older group; $T_{1/2}$ was slightly prolonged (6.0 vs. 4.8 h) while t_{max} was similar (0.5h vs. 0.6 h). Headache, rhinitis, nausea, dyspepsia and flushing were observed with no clear differences between

age groups.

In the Phase-II-study, the IIEF-erectile-function-domain-scores improved for all vardenafil groups. Mean changes from baseline for men <45 y were 1.1, 7.9, 8.4 and 8.1 for placebo, 5 mg, 10 mg and 20 mg respectively. For patients >65y, the corresponding increases from baseline were 0.5, 2.5, 7.8, and 10.3. Total adverse events for the younger group ranged from 13.1% to 28.2% and were similar for the older group, ranging from 5.9% to 20.2% with no clear dose relationship.

PK characteristics of a 40-mg dose of vardenafil were similar for younger and older patients although older men experienced slightly higher and more prolonged levels. The at-home study showed that vardenafil given in doses up to 20 mg improved erections in both younger and older patients, and was well tolerated in both age groups.

P1-10

Gene expression profiling in the crura penis of streptozotocin-induced diabetic rats

Jintetsu Soh, Yoshio Naya, Atsushi Ochiai, Akihiro Kawauchi, Akira Fujito, Naoto Nakamura, Masato Katsuyama, Chihiro Yabe-Nishimura, Tsuneharu Miki

*Department of Urology, Department of Internal Medicine, Department of Pharmacology,
Kyoto Prefectural University of Medicine, Kyoto, Japan*

Introduction: Diabetes-induced erectile dysfunction (ED) is assumed to be of a neurovascular basis. In diabetic rats, several physiological pathways leading to penile erection have been reported to be impaired. However, the entire picture of the molecular mechanisms underlying ED remains to be clarified. To overview the possible axes involved in diabetic ED, we carried out a broad-scale gene expression profiling in the crura penis of streptozotocin-induced diabetic rats.

Methods: Eight weeks after induction of hyperglycemia by intraperitoneal injection of streptozotocin (60 mg/kg), the total RNA was isolated from the crura penis Wistar rats by the acid guanidinium-phenol-chloroform method. ³²P-labeled cDNAs were synthesized from RNA obtained from diabetic rats and age-matched controls and hybridized separately to the cDNA expression arrays. Relative expression levels of the genes on

each array were quantitatively determined and compared.

Results: Among the 588 genes on the array investigated, the expression level of insulin-like growth factor binding protein 3 precursor (IGFBP-3) was highly upregulated in the diabetic rats. On the other hand, the expression levels of ErbB3 EGF receptor-related proto-oncogene, G1/S-specific cyclin D2, liver carboxylesterase 10 precursor and UDP-galactose-ceramide galactosyltransferase were markedly decreased.

Conclusion: The augmented expression of IGFBP-3 in hyperglycemia may elicit reduced bioavailability of IGF in the corpus cavernosum. As IGF is known to induce NO-mediated vascular relaxation as well as to regulate cell cycle progression, the present findings may lead to a new avenue of treatment modality for diabetic ED patients.

P1-11

The efficacy of sildenafil in elderly patients with erectile dysfunction

Mineo Takei, Yumi Kawakami, Kiyoshi Komatsu, Akito Yamaguchi

Division of Urology, Harasanshin General Hospital, Fukuoka, Japan

Introduction: The prevalence of erectile dysfunction (ED) increases with advancing age, so the demand for treatment of ED in the elderly patients is very high. However, the risk for sildenafil, such as cardiovascular disease, may be higher in the elderly patients. The efficacy and safety of oral sildenafil for treating ED in elderly patients were evaluated.

Patients and methods: Two hundred and fifty-four patients with ED were evaluated. The patients were divided into two groups, the elderly group with the age over 65 years inclusive, and the younger group with the age below 65. The elderly group consisted of 75 patients (30%) and the younger group, 179 patients (70%). The efficacy and safety of the two groups were evaluated

and compared. Forty-one percent of the elderly patients had hypertension and 15% had cardiac disease. In the younger patients, 20% had hypertension and 6%, cardiac disease.

Results: The efficacy rate was 69% in the elderly patients. In contrast the efficacy rate was 84% in the younger patients. There was statistical significance. The incidence of side effect was slightly lower in the elderly group (15%) than in the younger group (20%).

Conclusion: The efficacy of sildenafil is lower for the elderly patients compared to the younger patients. But concerning the safety, there is no significant problems in using sildenafil in the elderly patients.

P1-12

Clinical studies of sexual function after radical retropubic prostatectomy for prostate cancer

Akira Tsujimura, Tohru Takahashi, Masaki Yamanaka, Akira Tohda, Sompol Permpongkosol, Norio Nonomura, Kiyomi Matsumiya, Akihiko Okuyama

Department of Urology, Osaka University Graduate School of Medicine, Suita, Japan

Some degree of erectile dysfunction (ED) is common in patients who have undergone radical prostatectomy for prostate cancer. The incidence of ED following even bilateral nerve-sparing radical prostatectomy has been reported 24 to 68 %. However it was also reported that there were some patients who could still have sexual function after non-nerve-sparing radical prostatectomy. Although nerve-sparing nature during operation must be one of the main factors, many other factors, such as the age of the patient, the length of time from operation, the stage of prostate cancer, and the experience of the surgeons, are thought to involve in the incidence of ED after radical prostatectomy. Here we investigated these parameters of patients, who underwent radical prostatectomy in our department, associated with sexual function. A total of 77 patients of prostate cancer were undergone radical prostatectomy between May 1995 and December 2000. Patient age was 68.3 ± 5.5 years (range 56 to

81). Of the 77 patients, 41 had undergone a non-nerve-sparing procedure and 36, a nerve-sparing procedure. Fifteen of the 36 patients had undergone unilateral nerve-sparing procedure. Operation time was 292 ± 57 min (range 220 to 510). With regard to the pathological stage of prostate cancer, 41 patients were in the stage T3, while 36, in the stage T1 or T2. Thirty one patients were treated with hormone ablation pre- and post-operatively. Pre- and post-operative sexual functions were evaluated using the International Index of Erectile Function (IIEF)-5 based on the scores for five items. We will focus on the relationship between postoperative sexual function and many operative factors including the types of nerve-sparing as well as the preoperative sexual function of patients. We will also mention the efficacy of sildenafil, because some of the patient with postoperative ED wanted to take sildenafil.

P1-13

Possible factors that would determine the outcome of patients with erectile dysfunction

S. J. Chia, Fams

Introduction: Since the introduction of effective medication for erectile dysfunction (ED), there is a tremendous increase in the number of urology consults for this problem. The objective of this paper is to evaluate the outcome of treatment of ED patients with viagra and attempt to determine the pattern and patient's characteristics for the successful outcome.

Materials and methods: The study included patients with ED for the past 3 years. Their demographic characteristics, co-morbid factors, physical fitness, degree of erection disability and the possible underlying factors were evaluated with the outcome and dosage of medication. The data were processed statistically and the factors that determine the successful outcome will be

identified.

Results: The study has a total of 456 patients with age range of 25 to 84 years. Ninety two percent are associated with non-psychological causes. Almost half of these patients have underlying medical co-morbid factors and they are on medication. The data suggested that age, co-morbid factors, degree of ED determined the outcome of treatment, *i.e* the younger the patients with less co-morbid factors and the lesser the degree and the shorter duration of ED, the best response rate will be for the treatment.

Conclusion: ED is comparable to other disease patterns where the earlier presentation and lesser the severity with shorter the complaint will have better outcome in response to medication.

P1-14

Effect of sildenafil citrate on post-transurethral resection of prostate erectile dysfunction

Jun Jiang, Feng-Shuo Jun, Yan-Feng Li, Luo-Fu Wang
 Department of Urology, Daping Hospital, Chongqing 400042, China

Introduction: We assess the effect of sildenafil in a group of erectile dysfunction (ED) patients after transurethral resection of prostate.

Materials and methods: Between February 2000 and January 2001, 42 of 245 patients who had undergone transurethral resection of prostate (TURP) suffered from ED and were prescribed oral sildenafil were surveyed using a confidential mail questionnaire. The mean age was 61.3 ± 8.20 years. All patients received 50 mg. The response, satisfaction and side effects were assessed using a modified, self-administered International Index of Erectile Function (IIEF) questionnaire before their first

dose of sildenafil and after at least 4 weeks of therapy. Response was defined as erection sufficient for intercourse. Preoperative, postoperative and pretreatment erectile functions were assessed and partner's overall satisfaction with sildenafil was measured.

Results: Of the 42 patients 36 had a positive response. The most commonly reported adverse events were headache (26%), flushing (6.9%), visual disturbance (5.8%), and nasal congestion (6.3%).

Conclusion: Sildenafil is an effective treatment for ED after transurethral resection of prostate and the patient response to sildenafil is confirmed by the partners.

P1-15

Congenital isolated penile torsion in adults: untwist with plication

Wai-yan Wong, Ju-Ton Hsieh, Jun Chen, Hong-Jiang Chang, Shih-Ping Liu
 Department of Urology, National Taiwan University Hospital, Taipei, China

Introduction: Congenital isolated penile torsion in adult is rare. The principle of treatment remains the same as treating penile curvature, which is to shorten the elongated part of tunica albuginea of the twisted corporal bodies. We had successfully applied a modified plication technique to correct 3 cases of this congenital anomaly.

Methods: From 1998 to 2000, seven patients of age 20 to 56 years were diagnosed as congenital isolated torsion of the penis. Three of them were corrected with tunica albuginea plication. The plication procedure is summarized as follows: Artificial erection was first induced. Along the twisted and elongated corporal surface to the penile shaft obliquely, a parabolic curve could be made as counter-direction to the torsion. Two points were then chosen. One was the proximal intersection of the curve

with the dorso-lateral line of the penis and another was the mid-point of the first point to the coronary sulcus along the parabolic curve. Perpendicularly to the curve, Allis clamps were applied to create bumps. Two interrupted 2-0 Vicryl U-shaped sutures, parallel to the curve, were placed to secure the bumps.

Results: All three patients received the treatment declared excellent functional and cosmetic results after surgery. No recurrence of torsion was reported after a mean post-operative follow-up time of 17 months (16-20 months).

Conclusion: We introduced a modified plication technique to correct the congenital isolated penile torsion in adults with ease.

P1-16

One stage correction of complex isolated penile curvature with plication

Wai-Yan Wong, Ju-Ton Hsieh, Hong-Jiang Chang, Jun Chen, Shih Ping Liu
Department of Urology, National Taiwan University Hospital, Taipei, China

Introduction: Congenital isolated complex penile curvature, with which no chordee is associated, is a rare deformity. A one-stage correction of this anomaly was attempted by plicating the tunica albuginea.

Methods: From November 1999 to February 2001, plication of the tunica albuginea were applied to treat five patients with congenital isolated complex penile curvature. Two plications were first performed to untwist the penile torsion, thereby changing it from a three-dimensional to a two-dimensional deformity. The remaining penile deviation was then corrected accordingly.

Results: The mean follow-up time was nine months. All patients declared excellent cosmetic and functional results with no recurrence of either angulation or torsion of the penis. After surgery, all patients started sexual intercourse with success, and no erectile dysfunction was experienced. One patient reported temporary and mild postoperative penile sensation impairment.

Conclusion: By first untwisting the torsion and then correcting the remaining deviation with tunica albuginea plication, congenital complex penile curvature can be surgically treated in a straightforward one-stage manner.

P1-17

Analysis of human ejaculation using Doppler ultrasonography

Atsushi Nagai, Hiroki Iguchi, Akihiro Kamitani, Masami Watanabe, Hiromi Kumon
Department of Urology, Okayama University Graduate School of Medicine and Dentistry, Okayama, Japan

Introduction: To analyze the phenomenon of human ejaculation dynamically using Doppler ultrasonography.

Materials and methods: The ejaculation processes were observed in a 28 years old healthy male with normal ejaculation and a 40-year-old patient suffering from retrograde ejaculation caused by incomplete spinal injury from a traffic accident. We used an ultrasonic image directed color Doppler system (Aloka SSD-2000) with a 7.5 MHz. electro-probe (UST-669). The probe was introduced into the rectum in the left lateral decubitus position. Ejaculation was induced by manual combined with audio-visual-sexual stimulation. In the patient with retrograde ejaculation, these processes were observed before and after surgery of bladder neck collagen injection. The dynamic processes of ejaculation were recorded on videotape.

Results: An ejaculatory stream was clearly detected. In the healthy male the prostatic urethra was slightly dis-

tended 3 to 5 seconds before seminal expulsion. A straight ejaculatory stream was observed from the ejaculatory duct to the bulbus urethra through the prostatic urethra. The rhythmic expulsion lasted for 12 to 13 seconds. The bladder neck began to open 13 to 14 seconds after the end of expulsion, and the residual semen in the prostatic urethra flowed into the bladder slowly. In the patient with retrograde ejaculation the prostatic urethra was distended as expulsion began. The inframontanal and distal prostatic urethra were distended to a globular shape and filled with semen during the expulsion. No flow towards the bulbus urethra was observed. Two seconds after the end of expulsion the fluid in the prostatic urethra flowed slowly into the bladder. After collagen injection therapy a clear ejaculatory stream to the bulbus urethra rather than the bladder was observed.

Conclusion: Noninvasive dynamic observation of human ejaculation using Doppler ultrasound is feasible, providing a new method to diagnose ejaculatory disorders.

P1-18

Imoptence, depression and hormonal status in middle aged men

N. Brandstatter, A.M. Riedl, M. Stamenkovic, E. Ruecklinger, J. Huber, M. Metka, Ch. Kratzig

Altogether 350 healthy men, aged 45-65 years, were enrolled in a large prospective study to investigate their somatic, psychic and social status. The healthy men were investigated at their working place. We assessed in all probands urological status, hormonal status, questionnaire for sexual health in men International Index of Erectile Function (IIEF) and selfrating-scale for depression [Beck Depression Inventar (BDI)]. The relations between the IIEF-score, the depression score BDI and testosterone were described by Spearman's correlation analysis. Potential influences of depression or testosterone on sexual dysfunction were examined by a multiple logistic regression analysis utilizing the backstep selection method by the Wald statistic. Sexual dysfunctions were considered for IIEF-scores ≤ 21 . Depressions were diagnosed for BDI-scores ≥ 18 . The depressive and the healthy groups were centered by the medians of the BDI-score for the calculation of the odds ratio (OR) and the respective 95% confidence intervals (95% CI). Spearman's

correlation analysis revealed a highly significant negative relation between the depression score BDI and IIEF-score ($r = -0.398$, $P < 0.001$). That means, higher the depression scores were associated with stronger sexual dysfunctions. There was a weak, but significant correlation between low testosterone values and decreased sexual function ($r = 0.115$, $P = 0.019$). Testosterone and the BDI-score did not correlate significantly ($r = -0.088$, $P = 0.072$). The multiple stepwise logistic regression analysis confirmed the highly significant influence of depressions on the occurrence of erectile dysfunctions ($P < 0.001$). The odds for a sexual dysfunction of a subject in the depression group (BDI ≥ 18) is 16.8-fold higher than in the healthy group (OR = 16.8, 95% CI 6.4 - 44.0). Testosterone was included into the logistic regression model as a confounding factor. Low values showed a trend to influence on sexual dysfunction, albeit not significant ($P = 0.082$).

P1-19

Gene expression of nitric oxide synthase in the diabetes mellitus rat penile tissues

Takushi Naroda, Hiro-Omi Kanayama, Susumu Kagawa

Department of Urology, School of Medicine, University of Tokushima, Japan

Diabetes mellitus (DM) is one of the important causes of erectile dysfunction. It is considered as a main factor reducing the nitric oxide (NO) production that leads to injury of peripheral autonomic nerve and cavernosal endothelium. OLETF rat is the inbred strain of spontaneous mutant which develop late onset diabetes. We investigated the reduction of NO synthase (NOS) mRNA expression in the penis of OLETF rats comparing with age matched control rats, and whether exercise treatments for DM rats influence the gene expression of NOS in the penis. Group 1: control (SD rats, $n=4$), Group 2: DM/no treat (OLETF rats, $n=4$), Group 3: DM/exercise (OLETF rats, $n=7$). In Group 3, free rotation exercises were loaded from 38 to 54 weeks old. At 54 weeks old, total RNA was extracted from the penile tissues, and mRNA expression of neuronal NOS (nNOS) and endothelial NOS (eNOS) were examined with RT-PCR analysis. We cal-

culated the intensity of the PCR amplification products of nNOS, eNOS and GAPDH using auto image analyzer and compared the gene expression with the ratio of nNOS and eNOS to GAPDH. At 54 weeks old with the OGTT test, the blood sugar (BS) level of Group 3 was significantly reduced comparing with Group 2. The gene expression of nNOS in Group 2 was significantly reduced comparing with Group 1. Group 3 was recovered compared with Group 2. Gene expression of eNOS was similar to nNOS pattern. It was considered that DM influenced the reduction of gene expression of NOS in the penis. In DM, following the BS level reduction, a tendency of gene expression recovery of NOS in the penis was recognized and it was suggested that BS level control in DM cases would influence the NO production in cavernosal peripheral nerve ends and cavernosal endothelia.

P2-1

Significance of blood lipid profiles in male erectile dysfunction

Geum Soo Oh, Nam Cheol Park

Department of Urology, College of Medicine, Pusan National University, Pusan, Korea

Introduction: Hyperlipidemia is known as one of the major risk factors for both erectile dysfunction (ED) and cardiovascular disease. We measured the lipid profiles (LP) and studied their correlation with ED to evaluate whether it is useful for the diagnosis, treatment and prevention of ED.

Materials and methods: 157 cases of patients (24-92 years old, mean age 44.5 years) with ED visited our clinic from Aug. 1995 to Aug 2001. As the control group, 30 cases with normal sexual function, normal lipid profile and without cardiovascular disease were selected. The LP, including the total cholesterol, cholesterol ester, total lipid, phospholipid, triglyceride(TG), high density lipoprotein (HDL), free fatty acid, TG/HDL ratio, and low density lipoprotein (LDL)/HDL ratio were measured. The causes of ED included diabetic, neurogenic, psychogenic, vasculogenic and unknown cause, being 73 cases (46.5%), 39 (24.8%), 24 (15.2%), 15 (9.7%) and 6 cases(3.8%), respectively.

Results: In the control group, LP are within normal range, but in the ED group, the total cholesterol is above the normal range in 13 cases (8.9%), cholesterol ester in 27 cases (18.2%), total lipid in 3 cases (2.0%), phospholipid in 11 cases (7%), TG 115 cases (76.72%), free fatty acid in 56 cases (36.7%) and HDL is below the normal range in 126 cases(84.0%). HDL was decreased significantly with aging in the impotence group ($r=-0.8$, $P<0.05$). With regard to the cause of ED, HDL and TG were significantly different in LP in the vasculogenic and non-vasculogenic ED ($P<0.05$). The TG/HDL ratio and the LDL/HDL ratio were significantly higher in the ED group than in the control ($P<0.05$).

Conclusion: The HDL, TG, TG/HDL ratio and the LDL/HDL ratio were important parameters in discriminating vasculogenic and nonvasculogenic ED. They are useful in the early diagnosis of ED as well as in predicting the prognosis of the therapeutic measures.

P2-2

Multislice dynamic contrast-enhanced mr imaging of the penis using intracavernous prostaglandin E1

K. Sawada, S. Saitoh, S. Kamidono

Department of Urology, Sansei Hospital, Kobe University School of Medicine, Kobe, Japan

Introduction: Magnetic resonance imaging (MRI) has been reported to be a noninvasive procedure that enables exact imaging of the penile anatomy. However, the optimal methodology of MR imaging has not been fully investigated.

Methods: This study was designed to evaluate the morphologic changes and intracorporeal hemodynamics with multislice dynamic contrast-enhanced MRI of the penis using intracavernous prostaglandin E1. Thirty-four patients, aged 22 to 82 (mean 51) years, were examined by MR imaging. Twenty-eight patients had erectile dysfunction (ED) and 8, clinical evidence of Peyronie's disease (3 Peyronie's patients had ED) and one, paraurethral induration. MR examinations were performed with a 1.5 T unit by using a 150 mm surface coil. The signal intensity-time curves were obtained for regions of interest in the corpora cavernosa (the proximal and distal places on either side). The 28 patients with ED underwent color duplex Doppler ultrasonography.

Results: MR images clearly displayed fibrous tissue or hematoma due to trauma. Patients with Peyronie's disease showed thickening or irregularity of the tunica albuginea or high contrast enhancement, indicating local inflammatory activity. Time intensity curves were arbitrarily classified into the following five curvilinear patterns. (1) Rapid increase and flat type, (2) Rapid increase and decrease type, (3) Gradual increase and flat type, (4) Gradual increase and decrease type, (5) Slow increase type. In our study, penile duplex ultrasound parameters did not necessarily correspond with the diagnosis by penile MRI, because ultrasonography cannot help assess intracorporeal abnormalities while penile MRI can depict the intracorporeal microcirculation.

Conclusion: Multislice dynamic contrast-enhanced MR imaging can demonstrate penile anatomy and can be used to evaluate the penile vascular structures and hemodynamics.

P2-3

The relationship between erythrocyte aldose reductase and erectile dysfunction in diabetic patients

Atsushi Ochiai, Yoshio Naya, Jintetsu Soh, Akihiro Kawachi, Akira Fujito,
Naoto Nakamura, Chihiro Yabe, Tsuneharu Miki

Dept. of Urology, Rakuwakai Marutamachi Hospital, Kyoto, Japan.

Dept. of Urology, Dept. of Medicine, Dept. of Pharmacology, Kyoto Prefectural Univ. of Med., Kyoto, Japan

Introduction: Erectile dysfunction (ED) is a common complication of diabetes. Aldose reductase (AR) has been implicated in various diabetic complications. The level of erythrocyte AR was higher in diabetic patients with complications than those without sign of complication. Aging and glycemic control have no influence on the level of AR.

Methods: The subjects were 62 diabetic patients, of whom 25 had chronic renal failure treated with hemodialysis (CRF group) and the remaining 37 did not have any renal failure (DM group). The controls were 20 age-matched healthy volunteers. The levels of AR and Hb in the blood were measured. There was no differences in the level of Hb between the patients and the controls. ED was diagnosed when International Index of Erectile Function 5 (IIEF 5) was 16 or less.

Results: The average IIEF 5 in CRF group, DM group and the controls were 5.2, 13.0 and 21.3, respectively. There was a significant difference in IIEF5 between the patients and the controls. The prevalence of ED in the CRF group, the DM group and the controls were 92%, 73% and 0%, respectively. The average level of AR in the CRF group, the DM group and the controls were 16.4, 9.4 and 9.9, respectively. The average level of AR in the CRF group was significantly higher than that in the DM group and the controls. The average level of AR in the DM group with ED was significantly higher than that in DM group without ED.

Conclusion: The higher level of AR suggested the presence of ED in diabetic patients without chronic failure. The measurement of AR could be useful for prediction of ED in diabetic patients without chronic renal failure.

P2-4

Tissue grafting for congenital and acquired penile curvature

CliveGingell

Bristol Urological Institute, Southmead Hospital, Bristol, BS10 5NB, UK

Correction of lateral curvature of the penis, whether for congenital curvature or acquired curvature secondary to Peyronie's disease by excision of a segment or segments of tunica albuginea is accompanied by penile shortening.

We have employed either Surgisis™, Cook® or Pelvicol™, Bard® as an implant after transverse incision at the maximum concavity of the curve in order to minimise the risk. Pelvicol™ is an acellular non allergenic porcine collagen matrix which integrates into the tissue becoming revascularised and repopulated with human

cells. Surgisis™ is a similar graft of small intestinal submucosa. We have also used these materials instead of vein patches in the Lue procedure to correct dorsal curvature [1] of the penis after mobilisation of the dorsal neurovascular bundle. Results from the first 20 cases will be presented.

Reference:

1. Lue TF, El-Sakka AI. J Urol 1998; 160: 2047-9

P2-5

Immunological research in chronic nonbacterial prostatitis

Zhi-Lu FAN, Yue MA, Ping ZHANG, Zhong-Li WANG, Xian-Ping GAO

Department of Urology, 2nd Affiliated Hospital, Dalian Medical University, Liaoning 116023, China

Aim: The IAP, interleukin-6 (IL-6) and interleukin-8 (IL-8) were observed in 33 chronic nonbacterial prostatitis patients, aged 19-36 (23.6) years.

Methods: Blood and expressed prostatic secretion (EPS) were obtained from 33 patients and 16 normal controls. The IL-6, IL-8 and IAP in the serum and the EPS were assayed.

Results: IAP determination ($\mu\text{g}/\mu\text{l}$) in the 33 patients: EPS 30~100 (range), 48 ± 13 (mean \pm SD); serum 250~600, 394 ± 103 ; EPS/serum ratio 0.05~0.04, 0.128 ± 0.078 . IAP in 16 normal controls: 100~240, 180 ± 51 ; 250~450, 310 ± 63 ; 0.4~0.75, 0.53 ± 0.03 , respectively. Comparison of IAP in EPS and serum in the patients, $P < 0.001$, while in the control group, $P > 0.05$. IL-6 deter-

mination in the patients (pg/ml): 42~138, 89 ± 36 ; 41~138, 93 ± 28 ; 0.70~3.81, 2.48 ± 1.23 , respectively. In 16 normal controls: 41~92, 76 ± 13 ; 45~72, 61 ± 8 ; 0.90~1.38, 1.18 ± 0.19 , respectively (all $P > 0.05$). IL-8 determination in the patients (pg/ml): 69~329, 251 ± 70 ; 21~56, 39 ± 13 ; 0.8~4.5, 3.09 ± 1.32 , respectively, and in the normal controls: 51~170, 83 ± 21 ; 30~110, 68 ± 26 ; 0.90~1.81, 1.55 ± 0.20 , respectively (all $P > 0.05$).

Conclusion: Chronic nonbacterial prostatitis may be a kind of autoimmune disease.

Keywords: chronic nonbacterial prostatitis; autoimmune reaction; interleukin

P2-6

Effects of *Eurycoma longifolia* Jack on sexual function in middle aged male rats

H.H. Ang, T.H. Ngai, T.H. Tan

School of Pharmaceutical Sciences, University Science Malaysia, Minden 11800, Penang, Malaysia

Introduction: *Eurycoma longifolia* Jack, commonly known as Tongkat Ali and sometimes referred to as Malaysian ginseng, has gained reputation as male aphrodisiac in Malaysia. Hence, the objective of this study is to evaluate the effects of this plant on the sexual performance in middle aged male rats who are 9 months old and retired breeders.

Materials and methods: Middle aged male rats were dosed with 0.5 g/kg of chloroform, methanol, butanol and water fractions of *E. longifolia*, while the control group received 3 ml/kg of normal saline daily for 12 weeks. Rats were tested daily using an electrical copulation cage, maintained at 0.10 mA, during the dark phase of the light-dark cycle (2000-0700 h).

Results: *E. longifolia* Jack enhanced the sexual performance of the middle aged male rats by producing hesitation times of 865-916, 860-914, 850-904, 844-875, 830-870, 825-860, 820-850, 800-840, 750-795 and 650-754 sec (controls produced 950, 934, 910, 900, 895, 890, 885, 880, 855, 860, 800 and 790 sec) throughout the investigation period. In addition, there was a transient increase in the percentage of the male rats responding to the right choice after chronic administration of 0.5 g/kg *E. longifolia* Jack.

Conclusion: *E. longifolia* Jack enhanced the sexual performance in the middle aged male rats, which further supports the folkuse of *E. longifolia* Jack as an aphrodisiac.

P2-7

Patient characteristics wanting vasectomy reversal

F. Sommer, S. Wolter, U. Engelmann
Cologne, Germany

Introduction: More than 30 million couples throughout the world are using vasectomy as a method of birth control. 4-7% of sterilised men request reversal. In an European multicentre study we assessed the characteristics of the patients who wish a vaso-vasostomy.

Patients and methods: We reviewed 1531 patients who underwent vasectomy and 238 patients who underwent vasectomy reversal. Data collected at the time of vasectomy include age, occupation, religion, number and age of children, and wife/girlfriend employment status; other data were reason for reversal and number of years between vasectomy and reversal.

Results: Vasectomy reversal occurred 16.5 times more often in men who underwent vasectomy younger than 25 years than in men older than 35 years. Men whose wives worked requested twice as often vaso-vasostomies as those whose wives were not employed. Men who

were younger at vasectomy tended to wait longer before reversal (young men median 8.9 years vs. older men median 4.2 years).

Conclusion: Patients who request vasectomy reversal most often chose voluntary sterilisation at younger age. Couples with two incomes were more able to afford vasectomy reversal and the cost of raising additional children. Being vasectomized before the age of 35 should be considered a risk factor for choosing vasectomy reversal. We suggest that young men should receive particularly thorough counseling about other birth control methods. Our data also showed that the patency and pregnancy rate performed by microsurgical centres were quite high (e.g. in 157 patients the patency rate after vasectomy reversal was 77% and the pregnancy rate was 52%). Patients should be made aware of the high cost of reversal surgery.

P2-11

Coexistence of erectile dysfunction and cardiovascular disorders

Andrzej Golubinski, Bartłomiej Gliniewicz, Jacek Rozanski¹, Andrzej Sikorski

¹Department of Urology, Department of Nephrology, Pomeranian Medical Academy, Szczecin, Poland

Aim: In most cases erectile dysfunction (ED) has vascular etiopathology. From the newest literature there seems to be close correlation between ED and ischemic heart disease (IHD). Our aim was to estimate the rate of changes in cardiovascular system among men with normal status of cavernosal arteries comparing with patients complaining of ED of vascular origin.

Methods: 52 men participated, 38 (73%) with ED and 14 (27%) with normal erections, and all were admitted for surgical treatment of prostate diseases. The nature of ED was analysed utilizing blood flow velocity measurements in cavernosal arteries. In each case color Doppler examination was done after pharmacological stimulation with intracavernosal papaverin injection. Cardiovascular status was evaluated utilizing blood pressure measurements, electrocardiograms and pulse measured on femoral and dorsal foot arteries.

Results: After intracavernosal pharmacostimulation 21 patients (40.3%) got erection, including 8 with and 13 without ED in anamnesis. All this group had normal

status of cavernosal arteries, assessed with color Doppler evaluation. Of these 21, sixteen (76.2%) did not have any cardiovascular disorders, four (19%) were diagnosed hypertension (WHO I/II) and another four (19%) were treated for IHD. In three cases both cardiovascular disorders coexisted. No case of pulse deficit was observed in this group. In 31 patients (59.7%) without erection after pharmacostimulation, color Doppler evaluations were abnormal, suggesting arterial, venous or mixed pathology. Of these 31, nineteen (61.3%) had hypertension and/or IHD. Pulse deficit was observed in 5 cases (16.1%).

Conclusion: Patients diagnosed with hypertension or IHD have high risk of ED of vascular etiopathology. Lack of erection after pharmacostimulation and abnormal color Doppler results should prompt to further investigations toward hypertension and IHD.

Keywords: erectile dysfunction, ischemic heart disease, hypertension

P2-12

Evaluation of sexual function and cardiovascular risk factors in patients on chronic hemodialysis

T.Kishimoto¹, M. Tamura¹, T. Shiotsu¹, S. Nakamura¹, K. Yokota², K. Yuasa², N. Terao²,
H. Iriguchi³, J. Fujita³

¹Department of Urology, Kochi Red Cross Hospital, Kochi, Japan

²Department of Urology, Kochi Takasu Hospital, Kochi, Japan

³Department of Urology, Kochi City Hospital, Kochi, Japan

Introduction: The efficacy and safety of sildenafil citrate in patients on chronic hemodialysis are less well defined. In patients with ischemic heart disease who complain of erectile dysfunction (ED), the use of sildenafil should be careful. We conducted this study to evaluate sexual function and cardiovascular risk factors in patients on chronic hemodialysis.

Materials and methods: A total of 80 men aged 28-90 (mean 63.2±2.3) years on chronic hemodialysis were investigated. The duration of chronic hemodialysis ranged from 10 to 250 (mean 70.7A±8.3) months. The International Index of Erectile Function 5 (IIEF 5) and an assessment question of sexual function and cardiovascular risk factors were used for the evaluation.

Results: The average score of IIEF5 was 5.5±3. In 77 patients the scores of IIEF5 were less than 22. Seventeen of 80 patients had past histories of ischemic heart disease. Fifty-eight patients had one or more cardiovascular risk factors including hypertension, hyperlipidemia, diabetes mellitus and smoking. 38 patients presented symptoms of ischemic heart disease upon exercise at MET6 degree. Only 7 patients were free from history of ischemic heart disease, cardiovascular risk factors and symptoms of ischemic heart disease on exercise.

Conclusion: Most of patients on chronic hemodialysis had ED and most of them had some cardiovascular risk factors. Therefore, in this group of patients the administration of sildenafil should be cautious.

P2-13

Cigarette smoking and prevalence of impotence among aging male in Taiwan

Hung Y. Chiou, Yi H. Hsu, Han S. Chiang

Aim: To estimate the prevalence of impotence and to evaluate the association between prevalence of impotence and cigarette smoking in people in Taiwan.

Methods: A total of 132 male residents aged 40 years were recruited. Structured questionnaire was used to obtain information of sociodemographic characteristics, habits of cigarette smoking and alcohol drinking. Impotence was evaluated using International Index of Erectile Function (IIEF). Logistic regression model was used to estimate the multivariate-adjusted odds ratio (OR) and its 95 percent confidence interval of cigarette smoking. The statistical significance of a multivariate-adjusted OR was examined by the significance test for regression coefficient.

Results: The distribution of study subjects was 57 (43.2%), 37 (28%), and 38 (28.8%) for age groups of 70.1+, 60.1- 70, and <60 years, respectively. Among

them, 53 (42.4%) and 35 (28.2%) were cigarette smokers and alcohol drinkers, respectively. The distribution of IIEF score of study subjects were 62 (47%), 15 (11.4%), 3 (2.3%), and 52 (39.4%), respectively, for IIEF groups of 24-30, 16-23, 9-15, score of mild, moderate, and severe was diagnosed as patient of impotence. The OR of study subjects whose age were greater than 70 years was 7.4 for the development of impotence compared with those who were 70 years, showing a statistically significant level. Study subjects whose pack-year of cigarette smoking were greater than 45 have significant multivariate-adjusted OR of 1.5 for the prevalence of impotence.

Conclusion: Cigarette smoking has a significant effect on the risk of impotence after adjustment for age and other risk factors.

Keywords: smoking, alcohol drinking, impotence

P2-14

Evaluation of ED developed in the younger age group (39 years old and younger)

Haruaki Sasaki¹, Ryuta Goto², Masamichi Sato², Yasutada Onodera², Masashi Morita¹, Shun-Ichi Suzuki¹,
Makoto Shimada¹, Takao Ikeuchi²

¹Department of Urology, Showa University Northern Yokohama Hospital

²Department of Urology, Showa University Fujigaoka Hospital

Introduction: It is likely that in recent years an increasing number of younger people has visited an outpatient department for erectile dysfunction (ED) treatment, but the details remain unknown. Hence, we performed clinical evaluation on ED development in people aged 39 years or less.

Materials and methods: Of 196 patients who visited the outpatient department for ED treatment at our medical institution, 56 (accounted for 28.6%) patients aged 39 years or less (17-39, mean 30.9 years) were enrolled in the study. The following laboratory tests were conducted whenever possible: (1) determination of NPT, (2) pharmaco-test with PGE 1 (20mg), (3) color Doppler ultrasonography, and (4) internal pudendal arteriography. The evaluation items included (1) age distribution, (2) chief complaints, (3) complications, (4) pharmaco-test, (5) color Doppler ultrasonography, (6) internal pudendal arteriography and (7) treatment.

Results: (1) In the 56 patients, 2 were 19 years or less, 16, 20-29 years, and 38, 30-39 years. (2) Chief complaints included ED in 47 patients, Peyronie's disease in 3 (5.4%), intravaginal ejaculatory disorder in 3 (5.4%), premature ejaculation in 2 (3.6%) and un consummated marriage in 1 (1.8%). (3) Complications included diabetes mellitus in 6 patients, pelvic fracture and injury in 3, spinal cord injury in 1 and pelvic organ surgery in 1. (4) Forty three patients were subjected to pharmaco-test: Response 1 in 10 patients, response 2 in 7 and response 3 in 27. (5) Thirty-one patients were subjected to ultrasound color Doppler test. Both of the

arteries in the cavernous body of penis were normal in 4 patients, either one of these arteries was abnormal in 10 and both were abnormal in 17. (6) Fourteen patients were subjected to internal pudendal arteriography. Both arteries of the penile cavernous body were normal in only one patient, and in the remaining 13 patients certain degrees of abnormality were seen. Classification of the causes of ED on the basis of the above results revealed that psychogenic ED in 27 patients (48.2%), neurogenic in 4 (7.1%) and vascular in 13 (23.2%). More particularly, the vascular ED was made up of arterial ED in 10, veno-occlusive ED in 1 and unknown cause in 3 (5.4%). Regarding the treatment, psychogenic ED group was treated with medication, by which response was found in 14 patients, while non-response in 1. Of the neurogenic ED group, response was found only in 1 patient when treated by medication. One patient is under treatment by self-injection. Of the arterial ED group, response was found only in two patients when treated by medication. No response was found in 6 patients, so they were then treated by revascularization. One patient with veno-occlusive ED was surgically treated.

Conclusion: One half of the ED developed in the younger age group was due to psychogenic causes, which could effectively be treated with medication. Vascular disorders, particularly serious arterial disorders, were found in 23% of the patients, against which medication was not effective. Revascularization was considered an alternative treatment.

P2-15

Does finasteride influence free prostate specific antigen (f-PSA) in patients with benign prostatic hyperplasia?

Thomas I.S. Hwang, Guang-Dar Juang, Chung-Hsin Yeh, Yi-Hong Cheng, Kuang-Yu Chou
 Division of Urology, Department of Surgery, Shin Kong WHS Memorial Hospital

Introduction: To investigate the influence of finasteride on fPSA in patients with benign prostatic hyperplasia (BPH).

Materials and methods: One hundred patients were randomly divided into two groups of 50 each. The study group received terazocin (2 mg/day) and finasteride (5 mg/day), while the control group received terazocin (2 mg/day) only. Symptom score, PSA, fPSA, uroflow rate and transrectal ultrasound of prostate (TRUS-P) were checked before and 6 months after medication. Serum free and total PSA were measured (Cis Bio international, France) before prostate manipulation.

Results: The serum PSA, f PSA and PSA ratio in the study group were 2.73 ± 3.34 ng/ml, 0.65 ± 0.43 ng/

ml and 0.29 ± 0.13 , respectively before medication and 1.08 ± 0.59 ng/ml, 0.26 ± 0.10 ng/ml and 0.29 ± 0.15 , respectively six months later; those in the control group were 3.13 ± 2.87 ng/ml, 1.05 ± 0.84 ng/ml and 0.32 ± 0.20 before medication and 2.68 ± 2.29 ng/ml, 0.69 ± 0.59 ng/ml and 0.29 ± 0.13 , six months later, respectively. The serum PSA levels were lowered by 60.5% and fPSA by 60.0% after finasteride with no significant reduction in the PSA ratio. In the control group all the changes were insignificant.

Conclusion: Currently, there are millions of patients with BPH received finasteride worldwide. The drug may obscure changes in PSA, thus these patients require regular screening for prostatic cancer.

P2-16

Alpha2-adrenoceptor antagonists: effects on ejaculation, penile erection and pelvic thrusting behavior in dogs

Akihiko Yonezawa¹, Shinobu Sakurada¹, Yukio Kimura²

¹Department of Physiology and Anatomy, Tohoku Pharmaceutical University, Japan

²Towada Urology Hospital, Japan

We previously reported that systemic administration of yohimbine, an alpha2-adrenoceptor antagonist, exerts a biphasic effect on ejaculation in dogs, when this function is analyzed using the amount of ejaculated semen in response to genital stimulation. To clarify the effect of alpha2-adrenoceptor blockade on male sexual function, we investigated the effects of 4 selective alpha2-adrenoceptor antagonists, rauwolscine, idazoxan, RX821002 and mydaglizole, on sexual responses elicited by manual penile stimulation in dogs. Rauwolscine (RAU) caused a biphasic effect on ejaculation; the amount of ejaculated semen produced by the stimulation was significantly increased by the lower doses (0.1 and 0.3 mg/kg), whereas it was decreased by the higher doses (1.0 and 2.0 mg/kg). The higher doses of RAU also markedly inhibited both penile erection and pelvic thrusting behavior. Idazoxan and RX821002, at doses of 0.1 and 0.3 mg/kg,

caused a significant increase in the amount of ejaculated semen without affecting other sexual functions. RX821002 (2.0 mg/kg), but not idazoxan (2.0 mg/kg), moderately inhibited both penile erection and pelvic thrusting behavior. Mydaglizole, a peripherally acting alpha2-adrenoceptor antagonist, did not affect the sexual responses at any dose (0.1-4.0 mg/kg). In the ejaculatory declining test, all alpha2-adrenoceptor antagonists (0.1 mg/kg), except for mydaglizole, completely prevented the decrease in ejaculatory capacity produced by antecedent ejaculation. These results indicate that though the range of the effective dose is narrow, the alpha2-adrenoceptor antagonists which can block the central alpha2-adrenoceptors have the stimulatory effects on ejaculatory function. The difference of the sexual effects may be based on the action except for the alpha2-adrenoceptor blockade.

P2-17

Comparison of the oral efficacy of vardenafil, a new highly selective PED5 inhibitor, and sildenafil in inducing penile erections in a conscious rabbit model

Erwin Bischoff, Elena Pages Palau, Thomas Mondritzki, Ulrich Niewoehner, Helmut Haning, Mazen Es Sayed, Thomas Schenke, Karlheinz Schlemmer
Karlheinz Schlemmer BAYER AG, Pharma Research Center, Wuppertal, Germany

Inhibition of cyclic guanosine monophosphate (cGMP) metabolism can induce penile erection during concomitant nitric oxide (NO) production. Vardenafil is a new, highly selective phosphodiesterase-5 (PDE5) inhibitor with greater potency than sildenafil *in vitro*. We compared the oral effectiveness of vardenafil and sildenafil in an *in vivo* model.

Vardenafil and sildenafil were given orally to conscious rabbits in a cross-over study-design, 6 animals per dose group (0.1, 0.3, 1.0 and 3.0 mg/kg). The length of uncovered penile mucosa was measured during the following 4 h and AUC was calculated. Erections were evaluated with and without the administration of the NO donor, sodium nitroprusside (SNP) (*i.v.* 1 h after oral administration), to mimic sexual stimulation.

In the presence of NO, all doses of vardenafil induced penile erections in conscious rabbits. The maximal

erection was achieved 5-10 min after SNP administration. The efficacy of vardenafil and sildenafil was potentiated by the simultaneous administration of SNP. Vardenafil was more effective than sildenafil at each tested dose (comparison of AUC data). At 0.1 mg/kg sildenafil exhibited no significant effect.

Vardenafil's and sildenafil's effects on penile erection were clearly demonstrated in the conscious-rabbit model. The previous findings of the higher potency of vardenafil compared to sildenafil were also demonstrated *in vivo*, suggesting that vardenafil will be effective at lower doses than sildenafil in clinical trials. The potentiation of the effect by NO implies that vardenafil would have enhanced activity during sexual arousal. The clinical development of vardenafil for the treatment of erectile dysfunction is proceeding.

P2-18

Eurycoma longifolia Jack increases copulatory behaviour frequencies in middle aged male rats

H.H. Ang, K.L. Lee

School of Pharmaceutical Sciences, University Science Malaysia, Minden, 11800, Penang, Malaysia

Eurycoma longifolia Jack, commonly known as Tongkat Ali in Malaysia, has been used mainly to increase the virility and sexual prowess in Malaysia. As such, a number of tests have been used extensively to evaluate the aphrodisiac property of *E. longifolia* Jack in the middle aged male rats, 9 months old and retired breeders. Hence, the objective of this study is to evaluate the sexual arousal of chloroform, methanol, butanol and water fractions of *E. longifolia* Jack after dosing these rats with 200, 400 and 800 mg/kg twice daily for 10 days and with penile anesthetization prior to tests.

Results from this study showed that there were no erections, intromissions, ejaculations or seminal emis-

sions during the 20 minute observation period. However, 800 mg/kg of chloroform, methanol, butanol and water fractions of *E. longifolia* Jack resulted in mounting frequencies of 2.6, 2.5, 2.5 and 2.6, respectively, during the observation period. In conclusion, this study gives further evidences that *E. longifolia* Jack stimulates the sexual arousal in middle aged male rats in addition to what was previously reported for the sexually active experienced male rats[1].

Reference:

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P2-19

The effect of Ashwagandha (Indian herbal medicine) on non-organic erectile dysfunction in male

Bhupendra Sharma¹, Kamayani Sharma², C.M.Sharma¹

¹*S.M.S. Medical College and Hospital, Jaipur, India*

²*Department of Botany, Rajasthan University, Jaipur, India*

Ashwagandha (*Withania somnifera* dunal) an herbal medicine used to enhance potency in males since very long time in the Indian system of medicine. We have studied 60 male patients complaining of loss of libido (age 30-60 yrs.). The patients were analysed clinically and by a specially designed questionnaire. Patients with organic cause of sexual dysfunction were ruled out.

These patients were given Ashwagandha at a dose

of 300 mg b.i.d. with milk for six months. Patients were evaluated before and after treatment by clinical history, interrogation with patients and their partners. 30% of the patients showed a marked improvement in sexual function. There were no significant side effects with this medicine.

In conclusion Ashwagandha is effective in the treatment of non-organic erectile dysfunction in men.

P2-20

Lumbar one (L1) vertebrae fracture causing impotence in males

Achal Sharma, Bhupendra Sharma, Rekha Sharma¹, P. P. S. Mathur

Department of Neurosurgery, S. M. S Hospital, Jaipur-302 004, India

¹*ESI Hospital Jaipur, India*

Sixty male patients of lumbar one (L1) vertebrae fracture were studied in the unit of Department of Neurosurgery. Of the 60 patients, 22 complained of loss of libido, in whom 20 had motor and sensory deficit.

Two patients complaining of loss of libido had bowel and bladder deficit. Twenty patients were operated, in whom 6 were improved by decompression. Details about the incidence, causes and outcome were discussed.

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Causative factor of copulatory disorder in rats following social stress

S. Niikura, O. Yokoyama, K. Komatsu, T. Mizuno, Y. Nagasaka, M. Namiki

Introduction: We investigated the causative role of testosterone in copulatory disorder in rats following social stress.

Methods: To generate the copulatory disorder, rats in the experimented group were attacked by residents for 10 min per day for 7 consecutive days (social stress). Then the effects of the social stress on the frequency of mounting behavior and plasma testosterone level were evaluated. The effects of testosterone replacement and/or apomorphine injection, an dopamine receptor agonist, on the frequency of mounting behavior were also studied. The brain area within the medial preoptic area (MPOA) was removed for analysis for gene expression. Expression of *c-fos* and androgen receptor (AR) mRNA were examined before and after testosterone replacement.

Results: The stressed rats showed a reduced frequency of mounting behavior and a decrease in plasma testosterone level compared to the controls (both $P < 0.01$). When testosterone was supplemented, the fre-

quency of mounting behavior became significantly higher than that of the unsupplemented stressed rat ($P < 0.05$). The frequency of mounting behavior after apomorphine treatment was significantly higher than that in the vehicle treated rats ($P < 0.05$), but the frequency in response to the combination of testosterone and apomorphine did not reach the control level. After social stress, the *c-fos* mRNA expression was significantly increased compared to the controls ($P < 0.05$). The expressions of AR mRNA were not affected by social stress. Testosterone replacement, in addition to improving the frequency of mounting behavior, significantly reduced the expression of *c-fos* mRNA ($P < 0.05$).

Conclusion: These results indicate that a reduction in plasma testosterone may play a causative role in copulatory disorder induced by social stress and *c-fos* mRNA expression in the MPOA may be a useful tool to monitor copulatory disorder.