

**8th Asia-Pacific Society for Impotence Research (APSIR) & Exhibition**  
***“Sexual Dysfunction for the New Millennium”***

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**ABSTRACTS**

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**GUEST SPEAKERS**

## GS-1

## New pharmacologic treatments for erectile dysfunction

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The past two decades have seen revolutionary changes in the treatment of erectile dysfunction from surgical implantation of penile prosthesis to intracavernous injection and oral phosphodiesterase inhibitor. Better understanding of the basic physiology and pathophysiology will certainly bring about more innovations and better treatment modalities in the future.

The tremendous success of Viagra launch has stimulated much interest in the pharmaceutical industry. There are several treatments currently undergoing clinical trials: a) faster acting and longer duration phosphodiesterase type 5 inhibitors, b) potassium channel openers for intracavernous injection, c) dopaminergic antagonist such as sublingual apomorphine, d) topical agents such as alprostadil cream and a combination of aprostadil and prazosin and e) herbal remedies. The following is a brief discussion on the above topics.

### Drugs that are pending FDA approval in the US

A) Oral phosphodiesterase (PDE) 5 inhibitors: Several are under clinical development. The two front runners are Cialis (Lilly-ICOS) [1] and Nuviva (vardenafil from Bayer) [2]. Both of them claim to be more specific than Viagra (sildenafil) in  $IC_{50}$  and have essentially no visual side effect. Both claim to have faster onset of action than Viagra. The duration of pharmacologic action of Nuviva is about 4 hours while that of Cialis is 24 hours. Whether the two is contraindicated in patients taking nitrate is unknown. Both are expected to get approval from the Food and Drug Administration (FDA) in the US in 2002.

B) Oral phentolamine: Vasomax

C) Sublingual dopamine agonist: Sublingual apomorphine (Uprima) has been approved in Several European countries for the treatment of ED[3]. Its main action is on the dopamine receptors in the central nervous system presumably in the hypothalamus. Its onset of action is 15-25 minutes. It does not enhance sexual desire. The dosage is 2 to 4 mg. The side effects include nausea (17%), dizziness (10%) and vomiting (3%). A 0.6% incidence of syncope has been noted in clinical trials.

D) Topical agents: Topical alprostadil for ED has been approved in China. The efficacy is similar to intraurethral alprostadil (MUSE). The side effects include burning sensation at the glans and pain.

E) Injection agents: A combination of vasoactive intestinal polypeptide and phentolamine (Invicorp) for intracavernous injection has been approved in several European countries.

F) Intraurethral alprostadil + prazosin. The side effect profile is similar to alprostadil alone. However, the response rate seems higher with this combination.

### Drugs that are in early phase of development

A) Intraurethral PDE 5

B) Potassium channel opener for intracavernous injection

C) Melanotan (subcutaneous) [4]- Melanocortin receptors agonists, central action. Side effects: nausea and vomiting.

D) Yohimbine + L-arginine (Nitromed)

E) Topical alprostadil + SEPA (Topiglan)

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## GS-2

## Overview treatment of ED

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Since the launch of Viagra in August 1998, there have been many changes in Thailand. In fact, Thailand is the first country in Asia in which Viagra became available on the market. The word "Viagra" was on the news paper long before its launch. There were many discussions before it became available to the patients.

Yet long before the oral pill became available, the penile prosthesis implantation, vacuum constriction device (VCD), penile injection with papaverine and prostaglandin and alprostadil insertion were available to the public. These treatments needed training by experts and manuals were required. The goals of direct therapy were aimed towards ED patients as per their requests and all treatments were primarily in the hands of urologists. Things have now changed since the oral pill is available to the public.

Health information centers for men are increasing in numbers. They are flooded with all kinds of questions, not only on the ED but also sexual techniques and sex education. This provides the opportunity for people to ask questions. There are 2 new television programmes devoted to sexual medicine and sex education which never existed 10 years ago. These 2 late night programmes are very popular with high ratings and with many watchers of all ages both young and old.

The sex education in school in Thailand is not acceptable, making youngsters more curious and experimenting at their own risk. This year for the first time, Chulalongkorn University Institute of Medical Science offered a master degree in Sexual Education and approximately 100 people registered.

The oral treatment of ED seems to suit the general practitioners who are the first line physicians to do this job. There are one year programmes for FAD and physicians who are interested in ED and are willing to help educate, treat, and guide. They have formed a group called EDACCT (Erectile Dysfunction Advisory Council and Training of Thailand).

The EDACCT members went out all over the country to set up training and to respond to all kinds of questions, helping in practical aspects and to correct misunderstandings and guiding patients in many ways.

There is still misleading news regarding heart attacks caused by new drugs, creating fear of death after intercourse, alarming and frightening the people. As usual, newspapers in the third world are more concerned with their sale than moral or ethical headlines. They are misleading the public and are selling papers at the cost of the public.

With a generous fund from Pfizer, in 1999 for the first time in Thailand the EDACCT group and NIDA (National Institute of Development Administration) joined to study the prevalence of ED in Thailand. NIDA, a prominent graduate school in Thailand, with the help of EDACCT, conducted research on ED in four parts of Thailand, the countryside and Bangkok metropolitan. The completed study provided valuable information.

Today we realized that the diabetics, who comprise the majority of ED patients, can get help from treatment and many of them can switch to oral pills. The efficiency of Sildenafil was similar in type I and type II diabetics. We know that the plasma concentration of Sildenafil at 100 mg tablet will not significantly change the sperm motility, viability and membrane integrity. It means that the people can have normal babies.

Men with cardiovascular disease are more likely to have ED than the general population. The condition shares risk factors and some drugs used to treat cardiovascular disease may induce ED. This group of patients being treated are not receiving nitrites or nitrates, but have been taking beta-blocker, angiotensin-converting enzyme inhibitor, or calcium channel blocker for a minimum of 6 months and results are very successful.

ED following radical prostatectomy responded to treatment at only 43%, but from a study by Hong, the improvement rate will go up to 60% when treated for 18 months to 2 years following surgery.

The treatment of ED to radiation therapy patients seemed successful including patients who had brachytherapy. In the spinal cord injury group, which are 80% male, treatment by oral pill responded by 76%.

In patients with end stage renal failure or on maintenance dialysis, of the 302 male patients surveyed there was a response of 82%. Sildenafil seems to be the first line treatment for the group.

Depression is frequently associated with ED. Each has been identified as a potential cause of the other. The ED patients who are not treated for minor depression seem to respond well by up to 83%.

In ED patients with multiple sclerosis or Parkinson's disease, there seems to be improvement in both conditions by treatment with Sildenafil.

A group of kidney transplant recipient would like to have good quality of life. However, there was a fear that Sildenafil might alter the cyclosporin concentration and decrease perfusion to grafted kidney. This is not true and the dose used needs not be changed.

Public awareness and the role of the family physician to ask questions and to understand their patients seemed to be the first role in addition to many other services. Patients who are shy to ask questions should be guided with pictures or self assessment, or be helped in other ways. This is the new job for GPs in the next millennium.

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## GS-3

## Erectile dysfunction and men's health

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Erectile dysfunction (ED) is a chronic medical problem, which is mainly organic or physical in origin. Increasing evidences are revealing that ED may be an early marker of generalised neurovascular diseases. Changes in the neurovascular bed of the penis are often a reflection of changes in the rest of the body.

Prevention of erectile dysfunction is currently recognised as an integral part of men's health promotion. Treatment of ED includes attempt to reverse the neurovascular changes and the pathophysiological process. Modification of life style is recognised as an important part of the overall treatment. Recent studies from the Harvard School of Public Health (Bacon *et al*) have shown that physical activity was strongly inversely related to ED, and obesity and smoking increased the odds of ED by about 2.5 times.

Erectile dysfunction, like cancer prostate, has today become very important in men's health movement or campaign. Men's health promoters or campaigners are using ED to get the numerous important health messages to men generally and also to reach specific target groups, which have traditionally established strong barrier to health promotions. ED has been shown to be related to many

preventable diseases and health problems. The issue of ED is therefore commonly used as a major instrument in health education and prevention, *viz*, ED and diabetes mellitus, ED and CVS diseases, ED and smoking, ED and obesity, *etc*.

The treatment of ED is also recognised as an important issue in improving the quality of life of patients with certain medical problems, *eg*, spinal cord injury patients, patients with significant depression, men with aging symptoms which may be treatable, *etc*. Rehabilitation of these patients without addressing or treating the ED, commonly fail to improve the general well-being or quality of life of the patients.

The field of ED is rapidly growing and bringing about better understanding of molecular biology and genetic technology. It is merging into new aspects and other fields of medicine. New concepts of men's health and new discipline like 'Study of Problems of The Aging Male' have emphasised the importance of gender specific medicine. New discoveries and developments including new understanding of the central nervous system and spinal cord functions are slowly but surely being worked out, breaking into the new frontiers of medicine.

## GS-4

## Rationale approach for treatment of ED

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Erectile dysfunction (ED) is a common condition with 20-30 million men affected in the United States and more than 300 million worldwide. With the evolution of therapies for ED during the last few decades and the greater awareness of the existence of effective treatments, more patients are requesting evaluation and treatment for this condition.

In most cases, ED can often be determined from a careful history and physical examination. The use of a patient self-filled questionnaire (e.g. IIEF) complements the evaluation. The two most common organic causes of ED are diabetes and vascular diseases related to atherosclerosis. Medications are another well-recognized etiology for ED with anti-hypertensives and anti-depressants leading the list.

Physicians must be patient and empathize with his ED patient as many men delay seeking medical attention because of embarrassment. Naturally, the sexual partner is very important in the evaluation. If psychogenic issues are apparent, the astute clinician will recognize the need for sexual counseling and/or psychologic therapies. For the most part, sexual counseling complements any organic therapy that may be offered.

The most recent advance in the treatment of ED was the introduction of sildenafil (Viagra, Pfizer, NY, USA) in 1998. Sildenafil is an oral type 5-phosphodiesterase inhibitor that enhances erection but does not induce erection in men without sexual stimulation. Sildenafil is effective in men with ED associated with various etiologies including hypertension, diabetes, depression, peripheral vascular diseases, radical prostatectomy and spinal cord injury. Improved erection has been documented in

56%, 77% and 84% of men taking 25, 50, and 100 mg of sildenafil, respectively.

The major contraindication to the use of sildenafil is the use of nitrates, as this combination may cause profound hypotension. Side effects are generally short-lived and mild. The most common include headache, G.I. upset, flushing and muscle aches.

Patients who fail treatment, complain of side effects or have contraindications to sildenafil, may proceed to the use of local vasoactive agents. These can be delivered as an intraurethral suppository (MUSE, Vivus, USA) of alprostadil or by intracavernous injections of one or a combination of alprostadil, phentolamine and papavarine. The associated risks include priapism, hematoma and scarring. There is a high dropout rate because of fear of needles. The topical gels and creams are generally ineffective.

Vacuum erection devices can cause mechanical erection in most patients. Unfortunately, they are somewhat cumbersome to use and produce an unnatural erection. Penile prostheses are the most efficacious treatment for ED, but involve the expense and risks of a surgical procedure. They are usually used as a last resort when less invasive forms of therapy are not successful.

At present, the diagnosis and treatment of ED has evolved to the point where virtually every patient suffering from ED can be successfully treated. Oral medications, intracavernous injection therapy, intraurethral suppositories, penile vascular procedures and surgical implantation of prosthetic devices offer most men a viable option to correct their ED.

## GS-5

## New concepts in the management of Peyronie's disease

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Francois de la Peyronie first characterized Peyronie's disease in a series of patients in 1743, although previous cases had been described. We understand this disease process to affect up to 3.2% of the white male population, however it is not exclusive to white males. Currently the etiology for Peyronie's disease is not well defined, but most authorities believe that trauma to the penis incites an inflammatory reaction, resulting in a cascade of events causing the formation of fibrotic plaques in the tunica albuginea of the corpora cavernosa. Histologic examination of the plaques reveals alterations in the distribution of elastin and collagen fibers, as well as changes in the composition of the collagen fibers themselves. Patients commonly complain of one or more signs and symptoms, which include plaque, hourglass deformity, painful erection, curvature of the erect penis interfering with intercourse and erectile dysfunction.

Treatments for Peyronie's disease cover a wide spectrum. Because of reports of spontaneous resolution of the disease, most authorities recommend a conservative approach for the first 12 months. Oral therapy, including vitamin E, Potaba, cohcicine and tamoxifen, have been used with varying degrees of success. Recent interest has been generated in intralesional injection therapy into the Peyronie's plaque with agents such as verapamil, collagenase and interferon  $\alpha$ -2B.

In the event that conservative, medical or intralesional therapy proves unsuccessful, a number of surgical options exist to correct the penile curvature. It is mandatory to ensure that the plaque size and penile curvature

are stable prior to considering any invasive procedure. Early surgical techniques described excision of a wedge or plication of the contralateral corpora from the curvature in order to straighten the penis. Unfortunately, penile shortening is an unwanted result. Recent operations have focused on either incision or excision of the fibrotic plaque itself with replacement by a variety of graft materials. These have ranged from autologous dermis and vein grafts to allografts of processed fascia. At our institution, we have had previous success with a synthetic material consisting of silicone with Dacron mesh borders. These grafts, however, are no longer available, leading us to search for an alternative. We studied commercially available processed pericardial tissue (Tutoplast, Biodynamics International, Parsippany, USA) as a graft material in the surgical therapy of Peyronie's disease and recently reviewed the outcomes of this surgical procedure after a longer period of time.

After a long-term evaluation, this technique continues to be successful. When coupled with placement of a penile prosthesis, a straight and functional erection can be expected in all patients. In those patients without placement of a prosthesis, we have seen better long-term outcomes with patients with small to medium-sized, dorsally located plaques. Patients with larger (>6 cm) and ventrally located plaques possibly had an alteration in their veno-occlusive mechanism resulting in their erectile dysfunction. However, they continue to have straight and functional erections with appropriate intervention.

## GS-6

# Surgical treatment for Peyronie's disease

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Our experience in the three surgical procedures: tunical shortening, tunical lengthening and prosthesis implantation will be discussed.

### **Tunical shortening**

We prefer to perform plication on an erect penis produced by intracavernous injection of papaverine. For ventral curvature, 2-3 pairs of non-absorbable sutures (2-0 Ticron or Tevdex) are placed between the deep dorsal vein and the dorsal arteries. For dorsal curvature, same sutures are placed in the paraurethral ridges. No dissection of the neurovascular bundle or corpus spongiosum is necessary. In a study of 132 patients, we found the followings: At 6 months, 93% reported straight erections and 7% with almost straight but acceptable erections. Recurrence of curvature was reported by 11% of patients at a mean of 2.6 years follow-up. The most common complaints were of penile shortening (41%) and recognition of suture knot (12%).

### **Tunical lengthening**

The most critical step is restoring the length of neurovascular bundle by microscopic dissection of the dorsal arteries and nerves. We prefer saphenous vein graft. In our series of 112 patients, 95% reported that the penis was straightened but 13% of preoperatively potent patients reported decreased penile rigidity after surgery.

### **Penile prosthesis implantation with or without grafting**

If inflatable penile prosthesis is used, one should not use the distally expanding prosthesis (Ultrex, from AMS) because when the device lengthens it also tends to bend the penis. In most patients with mild to moderate deformity, insertion of a penile prosthesis tends to straighten the penis and no additional procedure is necessary. However, if severe deformity still persists after implantation, one can perform an incision of the plaque and cover the defect with material such as Totoplast or SIS. The use of operative molding of the penis over the prosthesis may help correcting mild deformity.

GS-7

## Peyronie's disease and natural tissue repairs

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We originally reported inflatable penile implants used to treat impotence in patients with Peyronie's disease in 1993. Since the publication of our original article describing penile modeling over an inflatable penile prosthesis, the technique has achieved widespread acceptance. We now have a historical perspective of the excellent long-term durability of the straightening. We also have found that modeling did not cause an increase in the rate of revision when compared to non modeled implants. This lecture will feature step-by-step instruction on the modeling procedure as illustrated by medical photography and video. Impending cylinder erosion is a common, long term complication of penile implants. Traditional correction of the problem utilized synthetic graft material such as Gore-Tex or Dacron as a patch or "windsock". We have subsequently concluded that the addition of graft to a implant increases the risk of infection. Mulcahy invented a ingenious repair of impending cylinder erosion which is easy and utilizes the tough fibrous capsule which is stimulated by prosthesis implantation. This lecture will feature step-by-step instruction on the repair of impending cylinder erosion with natural tissue as illustrated by medical photography and video. Abstract for Penile Prosthesis at the Millennium Penile Prosthesis Implantation has been part of Urology for over a quarter century. Many traditional operations such as pyelolithotomy, MMK, *etc* have been replaced by less invasive therapies. Despite the introduction of many oral and injection therapies for ED, penile implant persists as the gold standard for end

organ failure. Patient outcome studies report implanted patient satisfaction above 90%. Unfortunately, the therapy is not mainstream urology today. From a high of 29,000 implants in USA in 1991, only 12,000 were done in 2000. During the same time period in USA, 190,000 breast implants were performed by plastic surgeons. A recent survey by the AUA showed only 7% of USA urologists use penile implants. This is compared with virtually 100% of plastic surgeons utilizing breast implants. Penile implant surgery carries a high risk of litigation. It enters into areas of the anatomy not routinely visited by the urologic surgeon. The complications, while infrequent, are all to embarrassingly evident to the naked eye. There is a lack of emphasis in training for implant surgery at academic institutions in USA and abroad. The goal of this lecture is to illuminate the mechanical reliability and high patient satisfaction associated with today's penile implants. If the penis is sick, oral or injection medication will tread the ED. If the impotence is complete (penis is broken), only prosthesis insertion cures the problem. It is essential that a new generation of implanters be stimulated to embrace this durable treatment option as part of their practice. Penile prosthesis surgery has certainly matured into an effective, dependable and satisfying treatment modality. As we begin the millennium, our question remains: " Why are so few of these devices implanted in the vast population of patients with end organ failure? "

## GS-8

## Diabetes mellitus and female sexual dysfunction

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Sexual dysfunction is common in diabetic women and men. Relatively little attention has been paid to the problems of women until recently. Diabetic women may experience decreased sexual desire, decreased sexual arousal with inadequate lubrication, difficulty in achieving orgasm and dyspareunia. Diabetes affects sexual desire, which has been demonstrated in men and appears to be true in women as well. Diabetes doubles the risk of problems with sexual arousal in women. And it was reported that 14% to 45% of diabetic women complained of a decrease in vaginal lubrication. Vaginal lubrication occurs during the arousal phase of the sexual response. During this phase, female sexual excitement is accompanied by pelvic vasocongestion and swelling of the external genitalia including clitoral and vaginal engorgement. In a clinical study using photoplethysmography, diabetic women demonstrated significantly diminished arousal to erotic stimuli than non-diabetic women, although their subjective responses were comparable. Diabetic women have a higher prevalence of dyspareunia, which might be explained by a decrease in vaginal lubrication and/or a higher prevalence of vaginal infections.

The pathophysiology of female sexual dysfunction has been minimally investigated, whereas vascular and neurogenic etiologies have been demonstrated in diabetic

men. In a study using a male rabbit model, diabetes was associated with cavernosal trabecular smooth muscle fibrosis, which correlated with the degree of hyperglycemia. It was suggested that diabetes impaired neurogenic and endothelium-dependent relaxation of rabbit corpus cavernosum smooth muscle. Recently, the effect of diabetes on the female sexual function was also investigated using an animal model. In the streptozotocin-induced diabetic rat model, it was hypothesized that diabetes mellitus induced vaginal tissue fibrosis by TGF-beta1 expression. In this study, vaginal tissue revealed reduced epithelial layers, decreased submucosal vasculature and diffuse vaginal fibrosis. Thus, reduced vaginal lubrication in diabetic women may result from structural changes of the vagina. In the alloxan-induced diabetic rabbit model, diabetes mellitus produced significant adverse effects on the hemodynamic mechanism of clitoral engorgement, and led to diffuse clitoral cavernosal fibrosis.

In conclusion, diabetes mellitus has a deleterious effect on female sexual health. In building up the evidence presented by many diabetic animal-based studies, further intensive research is needed to elucidate the complex etiology of sexual dysfunction in women with diabetes.

## GS-9

## Female sexual dysfunctions

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Fundamental scientific research in female sexual dysfunctions (FSD) is an important area of sexual medicine that has been neglected over the last few decades at the expense of worldwide research and treatment interest for male sexual dysfunctions (MSD). However, during the last 2 - 3 years (after the launch of Viagra), scientists have shifted part of their attention from MSD and have generated tremendous research interest in understanding the female sexual physiology and treatment options for FSD.

One of the commonly encountered FSD is the sexual desire disorder. It is the lack of interest for sexuality or loss of libido; this should not be mistaken for the arousal disorder, which involves the second stage in female sexual response cycle. Sexual desire disorder may be related to various factors such as lack of fantasy and knowledge about sexuality, misconceptions and interpersonal problems or it could be due to some organic factors such as hormonal imbalance or dyspareunia. A component of desire disorder is sexual aversion. It is either the result of self-imposed antagonism and hatred for sexuality or it could be due to negative experiences during childhood development with aversion to sexual partner.

Sexual arousal disorder is partial or total lack of physical response or sensation to sexual stimuli. This includes subjective lack of lubrication and vasocongestion of the genitalia. Poor or absent engorgement and swelling of the vaginal parts may lead to diminution of subjective sense of sexual excitement or pleasure during coitus. Recent studies indicate that this phenomenon is akin to the physio-pharmacology of erection in man. As such, lack of vasocongestion could either be due to psychogenic or organic factors (e.g., diabetes mellitus).

Third component of FSD is orgasmic disorder. It could be primary or secondary anorgasmia (complete or partial at certain episodes of coitus). For some women, it is possible to have non-coital orgasm but it may become impossible during coitus or vice versa. However, past experience in non-coital means of orgasm could lead to an ease of achievement of coital orgasm in many instances. Sometimes, it is not possible to achieve orgasm in earlier period of marriage but it may be overcome over the years through coital experience.

The fourth component is the sexual pain disorder, broadly divided into dyspareunia and vaginismus. Dyspareunia is defined as a recurrent genital pain before, during or after intercourse; the case can either be psychogenic or organic in nature. It can also be secondary to vaginismus. Organic causes could be related to some pathology at the introitus, cervical or uterine levels. It is important to diagnose and relieve these problems before treating the psychogenic causes.

Vaginismus is the recurrent involuntary spasm of the outer third of vagina interfering with or preventing coitus. This can contribute to impotence and premature ejaculation in the partner and unconsummation. Vaginismus is generally considered to be a psychogenic phenomenon. However, vulvar vestibulitis can also result in vaginismus. Clinical condition of vaginismus may respond to sensate focus exercise and behavioural therapy with "homework" exercises. Other concerns of FSD may include anaesthesia with arousal and orgasm, rapid orgasm (similar to premature ejaculation in man) and hyperactive sexual desire.

The prevalence of all these problems varies from study to study. It is also dependent on whether it is community or clinical prevalence. In a clinical setting, prevalence of orgasmic disorder, among the dysfunctions for instance, varies from 18% to 76%. In community studies however, it ranges from 5% to 20%. On the other hand, dyspareunia rates in the clinical setting are between 3% and 5% while the community prevalence rate is 8% to 23%. One of our recent studies explored the sexual profiles of primary infertile Chinese women in Singapore and compared them with those in women of proven fertility. A series of 50 primary infertile (PI) Chinese women attending infertility clinic at the National University Hospital and 50 control women with proven fertility (PF) attending fertility control clinic of the same hospital were subjected to semi-structured interview, the questionnaire including profiles of sexual activities and other general information which were compared between the PI and PF.

After adjustments for age at marriage, duration of marriage and educational level, there existed significant difference between PI and PF on percentage of arousal

(PA) and orgasm (PO), achieved during coital episodes in the last six months ( $P=0.003$  and  $0.001$  respectively). For the frequency of coitus (FC), the difference between PI and PF was non-significant ( $P=0.804$ ), although the mean of FC in PI was slightly more than that in PF. Frequency of sexual desire (FSD) in the last six months was also similar between PI and PF ( $P=0.341$ ). While comparing these four aspects (PA, PO, FC and FSD), between PI and PF in the first six months after marriage, only PA was significantly different ( $P=0.007$ ). In the previous six months, 46% of PI and 28% of PF had felt pain during coitus, 20% of PI but none of PF had vaginismus. From these results, it was concluded that sexual profiles of infertile women varied from those in women with proven fertility in many respects; psychological stress secondary to infertility accounted for some of the negative associations in the infertile group.

In line with the current interest and studies on aging and hormone replacement therapy, sexuality in the elderly is becoming another important area of interest. In post-menopausal women, vaginal atrophy with poor lubrication can lead to friction, injuries and decrease in natural barrier protection against infection. This can precipitate dyspareunia. In debilitating diseases like arthritis, spinal cord injuries or pelvic inflammatory disorders, pain, stiffness and impaired locomotion may result in uncomfortable sexual activity. In breast cancer, mastectomy causes more dysfunction than lumpectomy. Hysterectomy and uterine prolapse also cause sexual dysfunctions in women. Poorly controlled diabetes leads to increased prevalence of vulvovaginitis and secondary

dysfunction.

Initial clinical trials with Viagra in USA, UK and Australia in 2000 (with support from Pfizer) had indicated that sildenafil did not improve overall sexual function or satisfaction in the females. Hence it would appear that female sexuality is not as straightforward and that translating the end organ related approaches of MSD to FSD may not be as suitable as originally hypothesized. Further studies are necessary for the global understanding of arousal and orgasm in women. End organ based treatment may be helpful but will not give the full satisfaction as seen with preliminary studies in women. Treatment for male ED such as oral sildenafil, PGE<sub>1</sub> injection, implants and vacuum pump act at the end organ level and they have been very successful in establishing erection, penetration and ejaculation and when one ejaculates he gets the orgasm easily. Are the females aided by such end organ based treatment measures or could it be that a simple quarrel or lack of love between partners result in inhibited orgasm in the female, thereby necessitating a global approach involving peripherally and centrally effective components, counseling as well as sex therapy?

National health and social life survey (1994) completed by 3400 men and women reported that one out of three women complained of sexual disinterest as opposed to one in six men. Therefore, FSD is not as simple or straightforward as believed. There is so much more to study and understand and to individualize, especially with regard to the treatment options; it is also important to understand the biosocial and cultural intricacy of sexuality in human relationships.

## GS-10

## Female sexual dysfunction and the menopausal transition

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The menopausal transition is accompanied by a number of symptoms related to a change in hormones, social circumstances and family roles. One of these symptoms is a decline in sexual function, as evidenced by a change in sexual desire, in arousal mechanisms and in orgasm. Although the other symptoms of menopause are usually adequately addressed by conventional hormone replacement therapy, using oestrogen with or without progestogen, the change in sexual function is often not.

The menopausal transition is accompanied by a precipitous fall in oestrogen production by the ovary. Falling oestrogen production is accompanied by systemic symptoms of hot flushes but also by urogenital symptoms of vaginal dryness and dyspareunia. Many studies have shown that oestrogen treatment, either systemic or local, ameliorates these changes. In studies of the menopausal transition, female sexual function, including libido, correlates well with circulating oestrogen. One should note that oestrogen itself promotes nitric oxide synthesis and endothelial mediated dilatation both in the pelvic vasculature and elsewhere. Genital sensation declines with declining oestrogen. It would seem logical to believe that maintenance of oestrogen supply to the vaginal mucosa and the pelvic vasculature might maintain female sexual response. However, studies have disagreed on the benefits of oestrogen therapy on sexual function, other than on vaginal lubrication.

Contrary to popular belief, androgen production by the ovary does not fall during natural menopause. In fact, the free androgen index rises through the menopausal transition, with the fall in sex hormone binding globulin. Cross-sectional and longitudinal studies of menopausal hormone changes have shown a correlation between the changes in oestrogen, but not in androgens, and decline in sexual function. Nevertheless, testosterone supplementation is a popular treatment for declining sexual function at the menopause. Several randomised studies of testosterone therapy in menopausal female sexual dysfunction have been performed. Most of these studies use

pharmacological, rather than physiological testosterone supplementation, and efficacy is less than convincing. Even a recent study of testosterone replacement in women with previous oophorectomy (and therefore low baseline testosterone) and low libido failed to show an improvement over placebo with physiological replacement doses. Pharmacological testosterone supplementation in several studies has been shown to impair the favourable lipid effects of oestrogen administration and the long-term effects of elevated testosterone on cardiovascular risk are unknown.

The mechanism of female sexual arousal is analogous to the process of erection in the male. Moreover, similar biochemical and molecular pathways are involved. It is therefore reasonable to assume that phosphodiesterase inhibitors will have a similar effect on sexual arousal in women as it does on erectile function in men. In studies measuring blood flow by plethysmography and vaginal ultrasound, sildenafil has been found to increase vaginal blood flow significantly over placebo. However, no difference was perceived by the women either in this study or in a study using sildenafil in a flexible dose regimen in non-oestrogenised postmenopausal women with sexual dysfunction.

One of the striking features of many studies of the medical therapy of female sexual dysfunction is the robust placebo response. This underlines the importance of placebo-controlled studies in the treatment of female sexual disorders. Why this should be so is intriguing. Perhaps it arises from the multifaceted nature of female sexual experience, whereas clinical trials address only one facet of either physiology or psychology. The importance of learned sexual experience and positive or negative feedback to feed or suppress desire also needs to be considered. Difficult though it may be, there is a need for well-conducted randomised studies in defined populations to guide us in the treatment of female sexual dysfunction rather than relying on anecdotal experience.

## GS-11

## The strategy for diagnosis and treatment of premature ejaculation

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Epidemiologic studies suggest that ejaculatory dysfunction is the most common male sexual disorder and that premature ejaculation (PE), estimated to affect up to 30% of men, is the most common presentation of ejaculatory dysfunction. However, the results of treatment for PE have been disappointing. Although there is often an optimistic opinion about the successful treatment of PE, sexual specialists know numerous cases in which PE has not been treated effectively with behavioral therapy. Several reports show that PE is still unresolved in a majority of men three years after behavioral treatment, such

as sensate focus and pause-squeeze techniques. Therefore, more scientific and precise differentiation of etiologies and types of PE are urgently needed.

For better understanding of PE to improve the success rate of treatment, the author presents a comprehensive review of the literature on PE, discussing the definitional issues, the classification, the etiology, the neurophysiology, the neuropharmacology and psychological studies. In addition, assessment strategies for developing an effective approach to the diagnosis and treatment of PE are also discussed.

## GS-12

## SS-cream: a new herbal drug for premature ejaculation

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Premature ejaculation (PE) is the most common type of male sexual dysfunction and has been reported to occur in over 35% of male subjects. The cause of PE has been regarded as psychological in the majority of patients and the management of PE, until recently, consisted primarily of sex therapy and psychological counselling. These therapies are intended to increase the pre-ejaculatory period and require the active participation of both partners. These techniques are time consuming and difficult to follow and in our experience produce poor results. Recent pharmacological treatment has been attempted, using neuroleptics, antidepressants, alpha blockers, lorazepam and clomipramine, as well as the selective serotonin re-uptake inhibitors (SSRIs). However, they have not always been successful and are associated with various adverse effects. The ideal drug

for PE must be effective in controlling the ejaculatory latency, should be simple with minimal untoward effect on orgasm, should enhance erection and without adverse response from partner. Penile hypersensitivity and hyperexcitability of glans penis presumed to play a vital role in the pathophysiology of premature ejaculation. We developed a topical preparation known as 'SS-cream' (Severance Secret Cream), which contains 9 natural herbal substances. In a double blind randomized multicenter phase III clinical study in 106 patients with premature ejaculation, there was a prolongation of ejaculatory latency time by more than 2 min in 82.2% of patients (*vs* 10.3% with placebo), and the self-reported sexual satisfaction rate was also significantly improved (SS-cream 82.2%, placebo 12.6%).

## GS-13

## Penile prosthesis implantation in Taiwanese patients

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Penile prosthesis implantation for correcting irreversible erectile dysfunction is a common, well established treatment in Western countries. However, in Asian society this treatment modality has gradually become acceptable only in recent years. We started to do penile prosthesis implantation since 1985 and more than 400 cases had been operated in the past 15 years.

**Materials and methods:** From December 1985 to May 1996, 331 men, aged 25 to 81 (68% 50 - 69) years, underwent penile prosthesis implantation at our hospital. In recent 5 years, we principally depended on prostaglandin E<sub>1</sub> intracorporeal injection to make the diagnosis. Based on the diagnostic evaluation, mild to severe arteriogenic or mixed type vasculogenic causes were the most prevalent underlying etiology.

These 331 patients received a total of 11 types of penile prosthesis. The malleable or self-contained inflatable penile prosthesis was implanted on an outpatient basis using a subcoronal preputial incision and local anesthesia. A longitudinal penoscrotal incision is routinely made for surgical implantation of multipiece inflatable penile prostheses. Patients received spinal anesthesia were admitted to the hospital overnight. Each patient was followed up at a special clinic until the surgical wound healed and all surgical complications were recorded in detail. Patients were then taught to manipulate the penile prosthesis and were allowed to use the prosthesis beginning 6 weeks postoperatively.

We evaluated penile prosthesis function 3 months after the surgery and regularly thereafter until the patient was lost to follow up. Any later complications were managed by conservative therapy or surgical revision as needed. In addition, a postoperative questionnaire evaluation was administered concerning satisfaction with sexual life after penile prosthesis implantation. Patients answered the questionnaire by telephone or directly in an interview in the outpatient clinic. For long-term evaluation we usually mailed a letter with our questionnaire or telephoned patients annually after the operation.

**Results and discussion:** Analysis of 331 patients revealed that the most common corpus cavernosum diameter in Taiwanese men is 11.0 to 11.5 mm. In 29.3% of our patients there was the problem of a pair of extra thin corpora cavernosa of less than 11 mm., which usu-

ally required implantation of a 9.5 mm malleable type prosthesis. In 1983 the cylinder length in 642 patients with a penile implant was 23 to 25 cm. in 1.4% (unpublished data). In contrast, the cylinder length was shorter in our Taiwanese patients. In 5.8% of our patients, the length was 12 to 14 cm. These corpora cavernosa data are valuable for surgeons as well as manufacturers of penile prostheses who may consider special design for Asians.

Concerning the most frequent complication of penile prosthesis implantation, postoperative infection remained the most serious medical problem in our series, eventually leading to prosthesis removal and reimplantation. Overall there were 19 cases of serious infection with local abscess formation, prosthesis erosion and even evidence of sepsis, such as fever and chills. Based on previous experience with 16 cases we know that reimplantation of a new device 6 months after prosthesis removal may be impossible because of severe cavernous fibrosis, and so recently we have immediately performed salvage penile prosthesis implantation, which succeeded in 2 cases.

Mechanical problems included any unsatisfactory outcome due to discomfort, improper implantation or device mechanical failure. Three patients complained of the inconvenience of the penile prosthesis in daily life, which caused serious psychological depression. Eventually the prosthesis was removed in these cases even with no other evidence of surgical complications. Deformity was deemed to be due to inadequate sizing in 9 cases in which a malleable prosthesis caused an SST deformity, requiring the addition of a rear tip extender. Mechanical failure was defined as any malfunction of the device after prosthesis implantation and in 22 cases it necessitated replacement with a new prosthesis. Mechanical failure occurred in a self-contained inflatable device in 13 cases, a 3-piece inflatable prosthesis in 6 and a malleable, metallic joint prosthesis in 3.

The general satisfaction rate was 86.6% in the 82 patients who returned our follow up questionnaire. Partner follow up is difficult to perform in our conservative society. The answer concerning partner satisfaction was mostly obtained from subjective patient opinion. When we interviewed the satisfied respondents, calculated re-

sults showed that the greatest benefit for those with a penile prosthesis was restoration of self-confidence and self-esteem "as a man" (76 of 82 or 92.7%). Although some men did not increase sexual activity, they felt free of the "anxiety of impotence" and able "to complete the responsibility to their woman." Instead of pursuing the goal of improving the quality of sexual life, penile prosthesis implantation may better redefine the image of the impotent patient in our cultural setting, which stresses the concept that potency means power and is the sym-

bol of a man.

**Conclusion:** Among the recent advances in impotence treatment, many less invasive alternatives seem to be more acceptable than penile implants. However, in our experience penile prosthesis implantation still has its place as a definitive and permanent therapy for some men with uncorrectable erectile dysfunction. We believe that more consideration of prosthesis selection, surgical preparation and patient-partner counseling is the basis for further success in the future.

## GS-14

## Penile implant: Korean experience

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Penile prosthetic surgery was the only therapeutic strategy for the non-endocrinogenic organic erectile dysfunction in the 1970s and early 1980s, but it has become a last resort therapy after trial of all other non-surgical therapies. The penile prosthetic surgeries done at urology-training hospitals in Korea were only 25 in 1986 and increased up to 200 in 1993 and then decreased to 87 in 1999. I also found a remarkable change in the primary treatment modality for erectile dysfunction. The proportion of patients treated by implantation of penile prostheses was 64.0% in 1985 and decreased to 1.8% on 1994 when vasoactive pharmacotherapy occupied 82.1%.

Since the first penile prosthetic surgery in 1983, the penile prostheses were implanted into 389 patients (malleable: 197, 3-piece inflatable: 107, unitary: 88) in my practice. The implanted malleable prostheses were mostly 15 to 18 cm in length, with diameters of 9.5 mm in 11.9%, 11.0 mm in 37.3%, 11.5 mm in 27.1% and 13.0 mm in 23.7%. Difficulties in implanting the 3-piece or Hydroflex prostheses had been occasionally encountered before devices with a smaller cylinder width (AMS 700CXM and Dynaflex) became available. In such cases, malleable prostheses had to be implanted instead, although the patients preferred the hydraulic prostheses.

We experienced skin erosion in 2 cases, urethral erosion in 6, infected prosthesis in 16. The primary isolated organism of infected prostheses was *Staphylococcus epidermidis* (46.8%). The corporeal length was shortened 3-5 cm when reimplanted more than 6 months after explantation.

The mechanical failure rates of AMS hydraulic prostheses: CX ( $n=19$ ), CXM ( $n=45$ ), and Ultrex ( $n=27$ ) were 10.5%, 8.9%, and 29.6%, with a mean follow-up period of 109.2 months, 43.3 months, and 70.1 months,

respectively. The average functional duration of the failed prosthesis was 60.5 months, 48.3 months, and 55.4 months, respectively. The verified causes of mechanical failures were: fractures at the junction of the input tube and cylinder in 7 cases, 3 fractures of the tubing near connector (2) and pump (1), 3 cylinder ruptures, 1 pump malfunction, and 1 reservoir rupture. All the cylinders having fractures at the junction of the input tube and cylinder had been implanted using a modified implantation technique (the input tube exited through a separate stab wound in the proximal corpus). Hydroflex ( $n=32$ ) showed a higher rate of malfunction (18.8%) than Dynaflex ( $n=110$ ) (4.5%) with a mean follow-up period of 137.3 months and 72.8 months, respectively.

Overall satisfaction rates of the patients and sexual partners were 75% and 66.7%. The main reasons for dissatisfaction were coldness of the penile shaft (11.5%), reduced penile size on prosthetic erection (9.8%), concealment problem (9.8%), decreased ejaculatory sensation (8.2%), and softer glans penis (6.6%). Ultrex did not provide a significant increase in penile length at inflation for small penis compared to 700 CXM. About 2/3 of the patients ( $n=20$ ) whom were recently interviewed had undergone the prosthetic surgeries without informing their spouses, although the importance of the spouse's knowledge was emphasized by physicians. This may be one of the explanations for the relatively low satisfaction rates compared with western results. Two patients had to be explanted due to spouse's protest.

In conclusion, selection of penile prosthetic surgery, devices, and surgical method for the treatment of erectile dysfunction should consider oriental characteristics; small penile size and cultural background.

## GS-15

# Abstract for penile prosthesis at the millennium

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Penile Prosthesis Implantation has been a part of Urology for over a quarter century. Many traditional operations such as pyelolithotomy, MMK, *etc* have been replaced by less invasive therapies. Despite the introduction of many oral and injection therapies for ED, penile implant persists as the gold standard for end organ failure. Patient outcome studies report implanted patient satisfaction above 90%.

Unfortunately, the therapy is not the mainstream Urology today. From a high implant rate of 29,000 in USA in 1991, only 12,000 were done in 2000. During the same time period in USA, 190,000 breast implants were performed by plastic surgeons. A recent survey by the AUA showed only 7% of USA urologists use penile implants. This is compared with virtually 100% of plastic surgeons utilizing breast implants.

Penile implant surgery carries a high risk of litigation. It enters into areas of the anatomy not routinely visited

by the urologic surgeon. The complications, while infrequent, are all too embarrassingly evident to the naked eye. There is a lack of emphasis in training for implant surgery at academic institutions in USA and abroad.

The goal of this lecture is to illuminate the mechanical reliability and high patient satisfaction associated with today's penile implants. If the penis is sick, oral or injection medication will tread the ED. If the impotence is complete (penis is broken), only prosthesis insertion cures the problem. It is essential that a new generation of implanters be stimulated to embrace this durable treatment option as part of their practice.

Penile prosthesis surgery has certainly matured into an effective, dependable and satisfying treatment modality. As we begin the millennium, our question remains: "Why are so few of these devices implanted in the vast population of patients with end organ failure?"

## GS-16

## Role of central nervous system (CNS) in erectile function: its implications in treatment of ED in the new millennium

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Advances in understanding the mechanisms of erectile function/dysfunction have resulted in great successes in pharmacological treatment for erectile dysfunction. However, the mechanism of central control of penile erection is not fully understood in spite of its critical role in the whole process of penile erection. In this talk, I will summarize recent advances in understanding of the physiology of the CNS that modulate penile erection.

### 1. Central neural pathway that modulates penile erection

The hypothalamus plays a key role in the central control. The medial preoptic area (MPOA) and paraventricular nucleus (PVN) in particular, are deeply involved in the erectile response. However, these nuclei may have different integrative functions modulating penile erection. For example, the patterns of intracavernous pressure (ICP) following electrical stimulation of two nuclei are quite different [1]. Furthermore, many previous investigations have suggested that the MPOA is a more integrative center for sexual behavior. The MPOA integrates sensory and hormonal information for sexual behavior. It sends fibers and information to the PVN. The PVN is considered a supraspinal erectile reflex center.

These hypothalamic nuclei send neural fibers to the spinal cord. In the spinal cord, the spinal parasympathetic nucleus (SPN) is one of the critical nuclei to ensure penile erection. This hypothalamus-spinal axis sends pro-erectile stimulation through the pelvic nerve, the major pelvic ganglion (MPG) and the cavernous nerve originated from the SPN to the end organ (penis).

### 2. Central neurotransmitters

Various neurotransmitters are distributed throughout supraspinal and spinal centers for sexual behavior and penile erection. These neurotransmitters may regulate integrative and complicated central regulation of penile erection through facilitative or inhibitory effects. In particular, oxytocin, and dopamine have facilitative effects on penile erection. Oxytocin is located in a descending pathway from the PVN to the brain stem and spinal autonomic center. When oxytocin is injected into the PVN,

hippocampus, it triggers penile erection. Dopamine facilitates male sexual behavior. The extracellular dopamine level in the MPOA and other nuclei increases during copulation[2]. Concerning the roles of central dopamine on penile erection, activation of D<sub>2</sub> receptors contributes to facilitation of reflexive erections.

### 3. The role of the cGMP-NO pathway in the central nervous system(CNS) on penile erection

Nitric oxide (NO) is also known to be a central neuro-modulator. Alterations in the NO levels in hypothalamic nuclei regulate sexual behavior and penile reflexes[3,4]. However, the effects of altered central NO levels on the magnitude/quality of the erection (intracavernous pressure: ICP) have yet to be evaluated. Our recent experimental results indicate that intrathecal administration of compounds that increase and decrease NO and cGMP levels is associated with corresponding increases and decreases in the MPOA-stimulated ICP response[5]. Our data suggest that CNS NO/cGMP levels can affect erectile capacity (i.e., ICP) in a rat model.

### 4. Feasibility of central drug for ED

Centrally acting drugs are recognized as a treatment choice for ED. Recently, apomorphine was approved in Europe. The efficacy and safety of centrally acting drugs are summarized.

### 5. Perspectives

Taken together, the above observations indicate that it should be possible to manipulate CNS targets to not only condition or modify sexual behavior and physiology overall, but moreover, to increase the efficacy and rigidity of the erection *per se*, that is, to increase erectile capacity. Such therapies may provide a requisite strategy for truly treating the "whole" person, rather than just the end organ.

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## GS – 17

# Fact and future in the use of centrally acting treatments for sexual dysfunctions and the growth of a specialty

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The role of the central nervous system (CNS) in sexual function has always been of great interest, yet only recently has it been possible to explore this scientifically in man. Erectile problems have been the focus of the first attempts at intervening to improve human sexual function. The drugs to improve peripheral mechanisms have successfully developed from invasive non-specific agents to the oral phosphodiesterase inhibitors we are now so familiar with. Yet throughout our experience with these agents, it has been obvious that CNS factors could modulate these peripheral events and in fact dominate them. The power of the CNS to make or break erections is readily demonstrated clinically.

In basic science the study of the pharmacology of central sexual signaling has developed to the point of identifying many of the major receptor types and responses. In man this progress has been much slower for several reasons: anatomical and functional tracer studies are not

possible, imaging is very difficult and remains at relatively low resolution, and the human sexual response to drugs is very much more complex than the simple mating paradigms observed in rodents.

The advent of apomorphine SL for the treatment of ED has revealed the potential for successful central pharmacotherapy. It has also pointed to the validity of scientific study based on good models and good basic understanding. In short it has opened up an entire new chapter in the study and treatment of humans with sexual problems. Agents acting on several dopamine and serotonin receptor subtypes are being studied, oxytocin and the melanocortins are being investigated and other parameters of sexual function (e.g., desire and orgasm) are getting long delayed consideration. And this is all being reviewed in the context of the parallels and differences in male and female response.

## GS-18

## Prostaglandin for erectile dysfunction

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Since Viagra<sup>TM</sup> appeared on the market, treatment of erectile dysfunction (ED) has undergone great change and the drug has become frequently prescribed in Japan. However, Viagra is not necessarily effective in all patients with ED. In addition, Viagra is contraindicated in patients who are making regular use of nitric oxide (NO) donors. Therefore, the optimum method of treating ED that is refractory to or contraindicated to Viagra has become a major matter of concern in the field of urology. Intracavernous injection of prostaglandin E<sub>1</sub> (PGE<sub>1</sub>) has become the focus of attention again in Japan. In Japan,

intracavernous self-injection of PGE<sub>1</sub> is prohibited by the Japanese law, and the Japanese Society of Impotence Research has applied for the approval of the self-injection to the Ministry of Health, Labor and Welfare. Despite the fact that intracavernous injection of PGE<sub>1</sub> was developed in Japan, it has been used only infrequently in the treatment of ED by the doctors. In this context, I will here talk about how the development of intracavernous injection of PGE<sub>1</sub> was started based on my experience, in an attempt to foresee the future of ED treatment with PGE<sub>1</sub> in this era of Viagra.

## GS-19

## Overview on the aging male – the urological perspective

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Due to the prolongation of life expectancy and the drastic reduction of fertility rate, it is projected that the elderly population (aged above 65) will increase within the next 25 years by 82%, whereas the new born population by only 3%. The working-age population will increase by only 46%.

The UN projects that by 2050, the proportion of persons above 60 will exceed for the first time the proportion of children below 15, and 13 countries will have more than 10% of the oldest old (aged above 80) in their population. South East Asia has not been spared from this phenomenon.

The aging population is an important resource to society and it is vital to sustain the productivity of this segment of the population in many of the rapidly aging Asian nations. For a large segment of this population, medical intervention, including hormonal manipulation or substitution may be necessary to alleviate problems, prevent disability and improve quality of life.

The use of hormone replacement is quickly becoming an important tool in the management of aging male problems. Through building and expanding our traditional base in managing the elderly male urological problems like prostatic diseases, genitourinary oncological diseases,

erectile dysfunction and incontinence, the urologists are no doubt the keys in answering the needs of the aging male.

Any male urological patient who is suspected to have aging problems should be screened with the St. Louis University ADAM Questionnaire, the Aging Male Symptoms Scale (AMS) or be aware of signs and symptoms of Growth Hormone Deficiency. Diagnostic workout for both androgen and growth hormone deficiency should be considered. Criteria for commencement of hormonal replacement, risks and benefits of the treatment weighed and the treated patient followed up closely initially and regularly subsequently.

The discipline of 'Problems of the Aging Male' is closely intertwined with the field of urology. Large proportions of urological patients are in the elderly age group. Urologists should always view their elderly male patient in their everyday practice as someone with more than just a specific GU complaint. Urologists are in excellent position to pick up elderly patients with altered hormonal profile who may benefit from supplementation. A Urologist is, no doubt most privileged to embrace this new and rapidly expanding field of Male Aging and Health.

## GS-20

## An overview on aging male from gynecological aspect

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Thailand is an agricultural country with a total population of 62.4 millions (9.0 million aged 45-59 years and 5.7 millions aged 60 and more). Thai life expectancy at birth was 68 years in male and 72 years in female (National survey in 1996). The elderly population (aged 60 years and more) is expected to reach 10.78 millions in 2020. This is due to the low death rate and low birth rate. The age profile has changed from a pyramid to a bell shape. Increased ratio of aging population causes problems of medical care and social and economic burden to the country. Therefore urgent and appropriate measures must be undertaken.

It is important to assess the current status of aging population and the associated problems. A national survey on aging in Thailand (1997) involving over 5010 subjects by S. Jitapunkul and S. Bunnag indicated that the major problems were poor vision, deafness, hypertension, osteoarthritis, heart diseases, diabetes, paralysis or paresis and dementia. Limitation of movement and dependency seemed to be major problems of male over the age of 60 years old.

An analysis of medical problems at the Andropause Clinic, Ramathibodi Hospital by H. Theppisai *et al* in the 43-74 year age group (106 subjects) reported a different picture. This was due to more comprehensive investigations *i.e.* dyslipidemia, PADAM symptoms, erectile dysfunction, prostatic hyperplasia, obesity, hypertension, hyperuricemia, diabetes and osteoporosis.

A report of common problems of aging males at 4 rural hospitals ( $n=1179$ ) was made by a team of Ministry of Health. These were hypertension, lethargy, backache, cramp, cough, myalgia, insomnia, laziness, poor health, restless, feeling hopeless – No sexual function, no laboratory investigation and no PADAM score were made in this male population

Few reports on sexual activities in the aging males showed that some still interested in sexual activities and

had more desire than the female partners. Poor health, culture and social values including lack of opportunity were the main reasons for decrease of sexual practice. Sexual problems in the elderly must be managed as a couple. There are many successful menopausal clinics organized in hospitals throughout the country, looking after menopausal problems of elderly women. However there are very few andropause clinics for the chronically ill elderly males who should be taken care just as much as women. The Department of Public Health, Thailand is trying to establish Andropause clinics throughout the country as a part of National Plan for Health Care of Thai elderly male population aiming at the ages between 40-59 years, with the objectives of preventing medical disorders and promoting the quality of life in the aging males who should have independent, dignified, useful and healthy aging life. Andropause clinics may be run concurrently with menopause clinics. Current Problems of Andropausal clinic in Thailand are :

- a. Trained personals
- b. Space
- c. Laboratory support
- d. Financial support
- e. Documents
- f. Referral centers
- g. Costly drugs

The gynaecologist is interested in aging males different to the urologist and the geriatrician. His interest is in sex hormonal changes and the consequences of organ dysfunction including sexual dysfunction. The urologist concerns mainly with the prostatic problems, urinary function and sexual function. While the geriatrician cares for the elder aged group (over 60 years) who usually has problems of poor vision, hypertension, diabetes, movement and dependency.

GS-21

## The aging male: controversies & challenges

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Increased life expectancy from lowered mortality rate and a decline in the fertility rate have led to an aging global population. The rate of aging is accelerating especially in developing countries which, ironically, lack adequate resources to cope with the consequences.

The socio-economic impact of population aging is enormous when, as the result, labour supply decreases, national savings drop, dependency ratio rises and demand on healthcare and social support escalates. Apart from issues such as housing, communications and transport, age-related medical problems are considerable. These may be gender-specific conditions or general problems regardless of sex.

In the management of the aging male, controversies have surfaced concerning not only when and how to treat conditions such as androgen deficiency but also what and which criteria to apply for their recognition and diagnosis. Whether all aging males should be screened for prostatic cancer is yet another unresolved issue.

The challenges are many, ranging from budgetary considerations for the politicians to relentless efforts of the clinicians to achieve healthy aging. If population aging is to be dealt with effectively, it is essential for each country to have a national strategy in place which may cater for its needs within the constraints of its resources.

## GS-22

## What is the role of endocrinologist in care of quality of life in aging population

ThepHimathongkam

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The aging population is increasing very rapidly everywhere in the world. The cause of death in this population will most likely be cardiovascular diseases, including myocardial infarction and cerebrovascular accidents. The quality of life of the aging population depends on the long period free of the disease process. The important causes of the process of development of the cardiovascular diseases are diabetes mellitus, hypertension and dyslipidemia. Type 2 diabetes mellitus predominates in the Asian population. The main causes of type 2 diabetes mellitus are insulin resistance. Insulin resistance arises from genetics, obesity, hypertension and dyslipidemia. There is a disturbing increase in the prevalence of overweight and obesity in the population including the adolescence, which leads to an alarming rate of occurrence of type 2 diabetes mellitus in the adolescent population due to insulin resistance. The pathogenesis of atherosclerosis is being elucidated more and more. It is becoming apparent that insulin resistance causes the early

cascade of the process of development of atherosclerosis. Primary prevention of the development of insulin resistance will prolong the disease free process in the older diabetic population. Therefore it is imperative to detect insulin resistance early in the process of development. This must be done through education of the relatives of the diabetic patients to detect the disease early. Behavior modification has been shown to be effective in retardation of the development of diabetes mellitus. Many drugs are being on trial in the preventive program for diabetes mellitus. People with the risk factors for development of insulin resistance, namely family history of diabetes mellitus, history of gestational diabetes, obesity, hypertension and dyslipidemia must be tested for early detection of diabetes mellitus. Once diabetes mellitus develops tight control as well as constant monitoring of the effectiveness of control and early detection of the development of the microvascular as well as macrovascular diseases must be done.

GS - 23

## Shifting hormones in the aging male

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The condition of andropause has important biochemical and clinical manifestations but is no longer thought to be exclusively a reaction to decreasing androgens and the role of multiple and overlapping hormonal systems is increasingly recognized. Whether this is called the andropause or by another name the patients with this condition appear to be suffering an accelerated form of aging and some will have individual or clinical reasons to receive treatment. The changes usually attributed to androgen deficiency have been recognized more recently to be due to a broader problem with a number of inter-linked hormonal systems (including growth hormone, IGF-I, melatonin and leptin). Several clinical domains can be identified comprising the andropause: Substance (lean

body mass, visceral fat, bone mineral density and hemato-poiesis), Surface (hair and skin alterations), Central Nervous System (intellectual capacity, mood and sleep patterns), Sex (desire and erection) and Prostate. Investigation should be directed at the presenting complaints and a simple biochemical profile based on measuring serum testosterone. Treatment is currently by testosterone replacement using one of a number of routes (parenteral, oral or transdermal). The object of treatment is to improve the index clinical domains and ensure biochemical androgen normalization. Contraindications to androgen therapy include known or suspected prostate or breast cancer.

## GS-24

## Application of gene therapy in the treatment of erectile dysfunction

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Erectile dysfunction (ED) is a condition defined by the inability to attain or maintain penile erection sufficient for satisfactory sexual intercourse. Basic research in corporal cavernosal smooth muscle (CCSM) physiology and identification of the central mediators involved in the erectile process has contributed to the development of pharmacological agents that can effectively treat ED patients. At present, the diagnosis and treatment of ED has evolved to the point where virtually every patient suffering from ED can be successfully treated. Vacuum erection devices, intracavernosal injection therapy, intraurethral suppositories, oral medications, penile vascular procedures, and surgical implantation of prosthetic devices offer most men a viable option to correct their ED. However, despite the overall success and efficacy of the aforementioned therapies, there are implicit side effects, complications and contraindications. Therefore, the development of future therapeutic options for the treatment of ED should focus on those strategies with fewer adverse effects and absence of contraindications. Gene therapy for the treatment of ED may become a viable and relatively non-invasive therapeutic option. The development of methods to deliver specific genes to mammalian cells has kindled a keen interest in treating acquired human diseases with gene-based therapies.

Somatic gene therapy can be defined as the ability to introduce genetic material (RNA or DNA) into an appropriate cell type *in vitro* or *in vivo*, thus altering gene expression of that cell in order to produce a therapeutic effect. Gene therapy involves a number of finite sequences: the administration of a desired gene into the body, delivery of the gene to a targeted cell, which is subsequently transported into the nucleus, and the expression of the therapeutic product. In the past ten years, there has been a substantial amount of basic and clinical research in the field of gene therapy, which can be attributed to a solid foundation of scientific advances in eukaryotic gene expression, viral genetics, and more importantly, the cloning of human disease-related genes. In the past, gene therapy approaches have been used to correct or treat disorders, which had an underlying genetic component. However, gene therapy has evolved

to the point where treatment of any disease process can be theoretically accomplished as long as there exists a therapeutic gene, which can either (a) effectively restore or supplement defective functions, or (b) antagonize the expression of a mutant gene.

In order to transfer genetic material to a variety of cells, DNA or RNA must be delivered in a vehicle or vector that allows efficient gene transfer. Some examples of vectors used to date for gene transfer include non-viral vectors (naked DNA, plasmid DNA, and liposomes), adenoviruses, adeno-associated viruses, and retro viruses. Each of these gene transfer vehicles offers different gene transduction efficiencies and possesses distinct advantages and disadvantages. The ideal vector would be one that would allow efficient transduction and long-term stable transgene expression while demonstrating little or no adverse side effects, such as risk of infection, immunogenicity, or host cell mutagenesis.

Gene therapy has been proposed as a viable treatment option for cardiovascular diseases because of the vascular origin of these disorders. This by biological extension suggests that gene therapy may be employed to treat vascular diseases of the penis; ED in most cases can be considered a manifestation of vascular disease. One problem that arises in cardiovascular gene therapy is that genes can be transferred or incorporated into the wrong peripheral vascular bed or organ. However, this is not a problem for ED gene therapy because the penis has an easily accessible external location. Hence, a tourniquet can be placed around the base of the penis and the desired gene can be administered directly into the corpora cavernosa, without entering the systemic circulation.

The principle mechanism of penile erection involves a delicate balance between the relaxation and contraction of arterial and trabecular smooth muscle in the corpora cavernosa of the penis. Any alteration, no matter how small, that may occur in this mechanism may have dramatic effects on erectile function. This is an important concept, because if ED gene therapy can restore the normal balance between the relaxatory and contractile mechanisms, then erectile physiology can be restored to normal functioning. In theory, a variety of strategies can

be used to restore normal potency in disease processes that cause ED in man. These theories serve as the motivation for exploring gene therapy techniques to restore erectile function in man. In our laboratory, we have successfully employed adenoviral gene transfer of the endothelial nitric oxide synthase gene to restore erectile dysfunction seen in aged rats.

Erectile dysfunction (ED) in the aging and diabetic male is caused in part by inadequate relaxation of the corpora cavernosal smooth musculature. Calcitonin Gene-Related Peptide (CGRP), a peptide neurotransmitter localized in the corpora cavernosa, is down regulated in the aging rat penis. Endothelial smooth muscle relaxation is impaired in diabetic corpus cavernosum. We examined the hypothesis that this reduction in CGRP and endothelial nitric oxide synthase (eNOS) may contribute to decreased cavernosal smooth muscle relaxation in aging and diabetic ED. Therefore, we sought to determine whether adenoviral-mediated gene transfer of prepro-CGRP and eNOS could enhance erectile responses in aged and diabetic rats. We found a significant decrease in CGRP concentrations, cAMP, and cGMP levels in aged rat cavernosal tissue when compared to younger rats. Aged rats had significantly lower erectile function as determined by cavernosal nerve stimulation when compared to younger rats. Five days after transfection with AdRSVCGRP, these aged rats had an approximate 3-fold increase in cavernosal CGRP levels when compared to AdRSV $\beta$ gal-transfected animals. The AdRSVCGRP-transfected animals also demonstrated an increase in CGRP mRNA and immunohistochemical localization of CGRP in the smooth muscle of the corpora cavernosa; cAMP levels in the corpora cavernosa were significantly increased, while cGMP levels remained unchanged. Adenoviral transduction efficiency of  $\beta$ -galactosidase reporter gene was measured by chemiluminescence and was observed in cavernosal tissue one and five days after transfection with AdRSV $\beta$ gal and AdCMV $\beta$ gal. More importantly, five days after administration of AdRSVCGRP, there was a significant increase in the erectile response to cavernosal nerve stimulation in the aged rat, similar to the response observed in younger rats. One day after administration of AdCMVeNOS in the diabetic rat penis, eNOS protein, and cGMP and nitrate + nitrite levels in the corpora cavernosa were significantly increased ( $P < 0.05$ ). Diabetic rats had a significantly decreased ( $P < 0.05$ ) erectile function as determined by CNS when compared to control rats as well as decreased cavernosal levels of nitrate + nitrite and neuronal NOS.

The increase in cavernosal pressure in response to CNS was enhanced in diabetic rats transfected with eNOS, which was similar to the control animals. These data suggest that *in vivo* adenoviral gene transfer of CGRP and eNOS can physiologically improve erectile function in the aged and diabetic rats.

In summary, the application of gene therapy for the treatment of ED represents an exciting new field, which still requires more basic research before *in vivo* gene therapy techniques can be applied to humans. Furthermore, new viral and non-viral vector systems which offer longer gene transfer efficiency, higher levels of expression of the transduced gene, and little or no immunogenic reactions represent important therapeutic parameters to be manipulated in developing gene therapy for safe application in the future treatment of ED.

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## GS-25

## Gene therapy for erectile dysfunction

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Gene therapy involves the transfer of selected genes into a host with the hope of ameliorating or curing a disease or a condition. Initially gene therapy was envisioned for the treatment of genetic disorders, but is currently being studied in a number of diseases, including cancer, peripheral vascular disease, arthritis, neurodegenerative disorders and many acquired diseases.

Since smooth muscle relaxation is the final step for penile erections. Many molecules and enzymes in the signal transduction pathway for smooth muscle relaxation can be potential targets for the treatment of erectile dysfunction e.g. nitric oxide synthase (NOS) and potassium channels (maxi-K channel, hSlo). In addition, many growth factors (gene product) have been shown to enhance angiogenesis and regeneration of nerve and smooth muscle and thus can also be used to treat vasculogenic, neurogenic ED or veno-occlusive dysfunction.

Theoretically, the penis is an ideal organ for gene therapy because of its external location and slow circulation. Several groups of researches have successfully performed gene therapy in animal experiments to date. Garban and associates[1] transfected nitric oxide gene into old rats' penis and were able to improve erection in those rats. Christ *et al* [2] performed gene therapy with potassium channel opener and showed significantly improved erection in diabetic rats. Huard *et al* [3] showed that myoblast mediated gene therapy was more successful in delivering iNOS into the rat penis than direct virus or plasmid transfection methods. Champion *et al* [4] demonstrated that gene therapy with eNOS significantly improved the erectile response to the old rats. Wessells and Williams[5] also showed successful endothelial cell transplantation into the corpus cavernosum and suggest that it may be a more efficient method of gene transfer.

In our lab, we have studied the feasibility of using growth factors or their genes to facilitate regeneration of cavernous nerve, helicine arteries and cavernous smooth muscle. We have produced several rat models: neurogenic, arterial (acute and chronic) and venogenic ED. The neurogenic ED model was created by either bilateral freezing or unilateral resection of the cavernous nerves. The acute arteriogenic ED was created by bilateral ligation of the internal or pudendal arteries. The chronic arteriogenic model was produced by feeding the rats with 1% cholesterol diet for 4 months. The venogenic model was induced by castration.

In the neurogenic ED model, treatment with either

systemic growth hormone[6] or BDNF gene mediated by adenoassociated virus (AAV) [7] enhanced the recovery of the cavernous nerve and erectile function in the rats. In both the acute and chronic arteriogenic ED rats, we have also successfully restored erectile function by either intracavernous injection of vascular endothelial growth factor (VEGF) or AAV-VEGF. In the castration-induced venogenic ED model, we have found that intracavernous injection of VEGF was able to prevent and reverse venogenic ED.

Although gene therapy is an exciting method of restoring erectile function, regulatory approval may not allow its use for ED in the near future. However, many of the growth factors known to enhance nerve growth and angiogenesis are available for clinical use today and may become the best preventive and therapeutic option in the next decade.

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GS-26

## Special lecture-novel drugs for ED: present and future applications

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In general, current therapies for the treatment of male erectile dysfunction involve administration of agents that facilitate or directly activate pro-erectile mechanisms. The past few years has seen a dramatic transition in patient management from small numbers receiving injection therapy towards the current widespread use of oral therapy with Viagra. We already know that the future will see advances in drugs that can more selectively antagonize the known phosphodiesterase targets. In addition, a new therapy is now available in some countries involving sublingual administration of the dopaminergic agonist apomorphine. The era of single choice of oral therapy is over. The future will see advances in diagnosis, pre-

vention and treatment that will appropriately place each of the therapeutic modalities into an appropriate position in the therapeutic armamentarium. Just as it has been in the treatment of many other conditions, the treatments of choice will be based on efficacy, distinctive characteristics, side effect or adverse event profiles, as well as patient choice but, hopefully also based on disease or condition specific targeting. What will be the new therapies and targets? The development of new agents for sexual dysfunction are just as likely to come out of the realm of existing drugs doing new tricks as opposed to the development of new chemical entities.

## GS-27

## Sexual dysfunction in male patients with spinal cord injury

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**Introduction and aim:** To assess the prevalence of sexual dysfunction in male patients with spinal cord injury, we performed the first survey of its kind following the launch of Viagra in Japan.

**Methods:** Questionnaires were sent randomly to members of the Japan Spinal Injury Patients Association during August and September 2000 (1.5 years following the launch of Sildenafil in Japan). The questionnaire included questions relating to age, the level of injury, IIEF5 score, "life satisfaction" score and ED impact scale which were proposed at the 1st International Consultation on Erectile Dysfunction.

**Results:** The questionnaire was mailed to 1,432 patients and, in September, 723 valid responses (50.2%) were received. The mean age of respondents was 56 (73% over 50). The age distribution of respondents was almost identical to that of the overall Sildenafil patient population in Japan. The level of injury were, thoracic 50%, cervical 24% and lumbar 22%. The IIEF5 scores gradually declined with age. The average IIEF5 score

was 5.5. The "life satisfaction" score revealed a dip in the "sex life" assessment, while the ED impact scale revealed a combined "dissatisfied" and "very dissatisfied" rate of 57%. However, only 12% of the respondents had undergone any kind of treatment. The most common treatment was Sildenafil and intracavernous injection, followed by vacuum device. The survey illustrated the fact that even though spinal cord patients are dissatisfied with their erectile dysfunction and the impact on their sex life, they still had not received any treatment. The reason for this discrepancy is thought to be poor accessibility to doctors that are knowledgeable about erectile dysfunction and/or the lack of reimbursement for the treatment of erectile dysfunction in Japan, which have become barriers to treatment for these patients.

**Conclusion:** Males with spinal cord injuries have severely deteriorated sexual function. Furthermore, access to efficacious treatment for these patients is still very much lacking. Patient education about sexual function is needed.

GS-28

## Sexual medicine and Danish general practitioners

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Increased awareness of sexual function and dysfunction through the last decade has increased the need for professional knowledge in sexual medicine in particular among the general practitioners (GPs). Six hundred GPs were sent a questionnaire with 110 variables. 321 valid responses (9% of total GP population) were returned and analysed for: professionally active years, gender, professional interest, own knowledge of and post graduate education in sexual medicine, interest for further education, information given to patients (passively) and obtaining information (actively) during routine health checks.

Equal proportions (about 5%) of GPs rated their professional interest in sexual medicine as extensive, while 70% rated it as midlevel. Among those 82% had received postgraduate education in sexual medicine during the last 5 years, while 62% among those reporting low level of interest had so.

Fourteen percent of the male and 10% of the female GPs, who had at least mid level of interest, routinely asked about sexual function at ordinary health control visits. In this context it should be noted that among the "interested" GPs, 57% of the men and 67% of the women felt that they had insufficient time for patients with sexual problems. Similar lack of time was reported by the less

interested GPs. However, the "interested" GPs spent significantly more time with sexually dysfunctional patients than did their "not interested" peers.

GPs to a limited extent see male patients with sexual disabilities other than erectile dysfunction (ED), which is more often encountered by male than by female GPs. Moreover, female GPs most often see female patients with sexual problems concerning desire, vaginal lubrication and dyspareunia, but not orgasmicity. Male ED, female lubrication and orgasmic problems are most often seen by those GPs who are professionally interested in sexual medicine.

In ED, oral PDE-5 inhibition is very commonly used, followed by intracavernosal injections, yohimbine and referral for sex therapy. The most common handling of problems of desire, ejaculation and orgasm is referral for sex therapy.

Few are, though, knowledgeable about sex therapy. Having had some courses in sexual medicine apparently did not (statistically) add to level of treatment knowledge.

**Conclusion:** Danish GPs treat a good deal of their (few) sexological patients, but many of them feel that they have insufficient knowledge for optimal management of these patients.

## GS-29

## Cultural differences in knowledge, perceptions and practices related to erectile dysfunction: a qualitative study

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This study aimed to examine the cultural differences in knowledge, attitudes and practices related to ED in Malaysia using a qualitative approach. Six focus group discussions (FGDs) were carried out with men aged 45-70 years, purposely selected from the general public. Informed consent was obtained. The FGDs consisted of 2 Malay groups ( $n=18$ ), 2 Chinese groups ( $n=25$ ) and 2 Indian groups ( $n=23$ ). The discussions were tape-recorded with permission and the transcripts were analysed using ATLAS<sub>t</sub>i, a qualitative data analysis software.

The FGDs revealed that there was a poor knowledge of ED among the races. The Malay and Chinese traditional remedies for preventing or treating ED are commonly recognised among all races. Many have a negative perception of someone with ED. The Malay and Chinese men tended to blame their wife for their problem and thought that the problem might lead to extra-marital affairs, unlike the Indian men who attributed their condition to fate. There seemed to be a common perception that the desire to achieve men's sexual satisfaction and sexual power is the main motivation for men with ED to seek treatment. More of the Malays would resort to traditional medicine for the problem. The Chinese men stated that they would be more comfortable with a male doctor, unlike the Malay or Indian men. The three ethnic groups also brought up the preference for the doctor to initiate discussion on sexual issues related to their medical condition. A lack of understanding of the socio-cultural aspects of ED often contributes to an inadequate consultation on the problem matter. Knowledge on the cultural differences related ED would be beneficial for general practice in a multicultural society.

**Introduction:** ED is defined as the persistent inability of male to attain and maintain a penile erection sufficient to permit satisfactory sexual intercourse (Morley, 1986; Aytac *et al*, 2000). It is present in approximately half of all men aged between 40 and 70 years (Morgentaler, 1999). Baseline data from the Massachusetts Male Aging Study showed that the prevalence of minimal, moderate, and complete ED was as high as 52% (Feldman *et al*, 1994). In Malaysia, results from a cross-national

study on the prevalence and correlates of ED conducted by the National Population and Family Development Board and the New England Research Institutes, USA showed that more than 40% of men between 40 - 45 years of age is affected by ED (MMT, 1999). Incidence of ED also seemed to increase with age. ED is a commonly reported condition among Malaysian men with more than 70% of the sample saying that they would seek medical consultation on ED. ED is estimated to affect approximately one million men in Malaysia. This is an estimated figure (of 10%) from the worldwide estimate of more than 100 million men (MMT, 1999).

Variations in the knowledge, perceptions and attitudes towards ED may be linked to cultural beliefs. Locally, there has been a scarcity of data pertaining to this issue. This qualitative study utilising focus group discussion aimed to examine the socio-cultural aspects of ED in a multicultural society.

**Methodology:** Six focus group discussions (FGDs) were conducted: 2 Malay groups ( $n=18$ ), 2 Chinese groups ( $n=25$ ) and 2 Indian groups ( $n=23$ ). A total of 65 general public men, aged 45-70 years, were recruited purposively on a voluntary basis with informed consent. The discussions were held at the University Hospital, Kuala Lumpur and at the Banting District Hospital, Selangor.

All FGDs were conducted based on a list of guidelines by a male moderator and assisted by a note-taker. Each FGD took approximately 1.5 hours to complete. All FGDs were tape recorded with permission, transcribed, translated and analyzed using the ATLAS<sub>t</sub>i 4.1<sup>®</sup> software for qualitative data (Muhr 1997).

### Results:

**Concept of ED:** Among the Malay men, ED was described as an illness condition and a loss of response or endurance. Sexual desire was also reduced, e.g., "Regarding our own health means not so healthy. The thing is less... less energy, less... less desire too!" or "based on response, it's reduced."

Responses from the Chinese included when a man suffers from loss of confidence, when he feels nervous

or has a psychological problem. Others brought up the perspective of sexual performance, which may suggest an ability to sustain an erection. Among the Indian men, some incorrectly defined ED as premature ejaculation while others defined it as being gay/homosexual. Some also suggested aspects of length of time that sex lasts or duration of maintaining an erection.

**Prevention and treatment of ED:** Responses on how to prevent or improve ED from the Chinese FGDs included foreplay, watching pornographic movies, view live sex shows with his wife, or change his environment, going on a holiday, taking food supplements and exercises. Others profess the benefits of alcohol, although not too much and the state of being happy and financially secure was noted in the prevention of ED. These responses suggest that ED is due to insufficient stimulation or lack of a conducive ambience for sex rather than physical causes.

As for the Malays, providing emotional and moral support, discussing the problem, massage treatment or taking traditional medications and seeing a medical specialist were mentioned. Many felt that they would seek help from traditional sources first before going to a doctor.

Several ideas came from the Indian FGDs on ways to prevent ED, *eg*, drinking alcohol to boost sexual performance, consumption of certain foods *eg* vegetarian vs non-vegetarian food. Sea food and meat consumption was distinctly known for increasing sexual desire, as these contains a high protein content. 'Viagra' was also mentioned spontaneously.

**Perception of a man with ED:** A man with ED is perceived as useless, hopeless and less of a man... "that means the man is hopeless, he lost his manhood" (quote a Chinese man) and "We have read in our testament that man without 'an ammai'(manhood) is no man. If he is not virile, he doesn't deserve the status of manhood. Life is pointless, produce no next generations. Therefore, manhood is vital" (quote an Indian man).

A man with ED is also viewed with sympathy, pity or despises from the opposite sex, *eg*, an Indian man quoted: "if he is really young means, we will pity him. We'll think what an age to suffer from this dysfunction. If he is 50 years old and above, and has children, we'll think its okay he is already old and have enjoyed life. We wouldn't feel pity. I wouldn't feel sad or pity for him. If he is 30 or 40 years old, I would advise him to see a doctor and take some medicine".

A few viewed a man with ED in a positive manner, as it might be due to a medical problem or a temporary problem due to stress or pressure to perform.

**Perceived Impact of ED on Relationship:** In the context of happiness, the Malays mentioned that there are many side effects of this condition affecting one's

relationship: "angry towards wife and himself... seldom mixes with people... self-isolation... life is not cheerful... From this, many other problems can arise". Blame and extra marital affairs were also revealed in the FGDs.

The Chinese men felt that the wife might blame them and rendered them as useless, whereas the Indian men mostly attributed fate to their condition although many agreed that this condition could affect one's relationship.

**Motivation for men to Seek treatment for ED:** The Malay FGDs revealed that "feeling weak in sex", as a motive for a man to seek treatment apart from encouragement from friends or elders. The availability and access to special services in government hospital would also motivate a man with ED to seek treatment. The Indian men talked about the need to secure sexual satisfaction for "family happiness". There was consensus in the groups that sexual desire and sexual satisfaction as being important motivation. Fear of wife indulging in extra-marital affairs also motivates a man in seeking treatment.

The Chinese referred to barriers or disincentives rather than motivation for ED treatment, particularly on its cost. Age factor was also mentioned as a motivation to seek treatment; "when we are young, we should go for treatment, but not so, if we are old". The Chinese seemed to take a philosophical attitude towards ED, *i.e.*, "take what comes naturally", "when you are able, you are able, when you can't, you can't! No need to force yourself".

**Preference on your doctor to initiate discussion on sexual issues:** The Chinese FGDs revealed that doctors generally would not talk about such matters as they are not willing to spend much time with patients. The majority said they have not experienced doctors bringing up such matters. They would have no problems should the doctor initiates the discussion.

Among the Indian men, the discussion tended towards the reasons why the patient should initiate the issue instead. Similarly, the Malays felt that the patient should initiate discussion of such issues.

**Discussion:** There appears to be little knowledge of the spectrum of ED, although most understand ED as a condition where the man is not able to attain an erection. Only a few Malays and Indians mentioned a reduction in responsiveness, strength or hardness of penile erection which are not tantamount to complete loss of erection.

The Malay and Chinese traditional remedies for preventing or treating ED are more commonly recognised among all races. It was interesting that there are no known traditional Indian treatments. Whether this is an indication that ED is less prevalent compared to other races, or that Indians are less concerned about the problem that merits further study.

The desire to achieve men's sexual satisfaction and sexual power seemed to be the main motivation for seeking treatment. This cuts across the various ethnic groups. The Chinese men, comparatively, tended to be more accepting of ED if it is due to the natural process of aging and felt there was no need to seek treatment under such circumstances.

The question as to whether the doctor should initiate discussion on sexual issues related to medical condition, revealed interesting insights into the general doctor-patient relations as well as those specific to ED conditions. The Chinese men in particular were cynical about doctors taking time and attention to discuss such issues with patients. On the other hand, both the Indian and Malay men felt that it would be more appropriate for the patient to initiate discussion on such issues should he have such fears or doubts for various reasons.

**Conclusion:** A lack of understanding of the socio-cultural aspects of ED often contributes to an inadequate consultation on the problem matter. Information on these could further enhance the consultation process and further promote understanding of ED particularly in a multi-cultural society.

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