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Review Article

Male sexual disorders

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Abstract In men sexual dysfunction refers to repeated impairment of normal sexual interest and/ or performance. What is regarded as normal sexual intercourse and what is thought to be impaired or unsatisfactory, depends in part on the expectations of the two individuals concerned. For example one couple may regard it as normal that the woman is regularly unable to achieve orgasm, whilst another may seek treatment. The problems of sexual dysfunction include those affecting sexual desire and sexual enjoyment, erectile impotence and premature ejaculation.

Key words
Sexual dysfunctions, impotence, orgasmic disorders, premature ejaculation, masturbation, dhat syndrome, phosphodiesterase type-5 inhibitors, selective serotonin reuptake inhibitors.

Introduction

Sexual response is a true psychosocial experience. Arousal is triggered by both psychological and physical stimuli. Psychosocial development, psychological attitudes towards sexuality and the attitudes towards one's sexual partner are directly involved with, and affect, the physiology of human sexual response. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)[1] defines four phase sexual response cycle. Phase 1 is desire, characterized by sexual fantasies and desire to have sexual activity; phase 2 is arousal, brought by psychological and physical stimuli, and characterized by penile swelling and erection; phase 3 is orgasm; consists of peaking of sexual pleasure, with release of sexual tension and rhythmic contraction of perineal muscles. A subjective sense of ejaculatory inevitability triggers man's orgasm, and phase 4 is resolution; consists of disgorgement of blood from the genitalia and return of the body to resting state (**Figure 1**).

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Physiology

Erection is a parasympathetic response. The afferent impulses from the genitalia and descending tracts from the brain carrying the erotic psychic stimuli reach the lumbar segment of the spinal cord. From here the efferent parasympathetic fibres in pelvic splanchnic nerve (nervi erigentes) containing acetylcholine and VIP as co-transmitter initiate the dilatation of the arterioles of the penis. The erectile tissue of the penis fills with blood, veins are compressed, blocking the outflow and adds turgor to the organ.

Ejaculation on the other hand is a sympathetic reflex. The afferent pathways

are mostly fibres from the touch receptors on the glans penis that reach the spinal cord

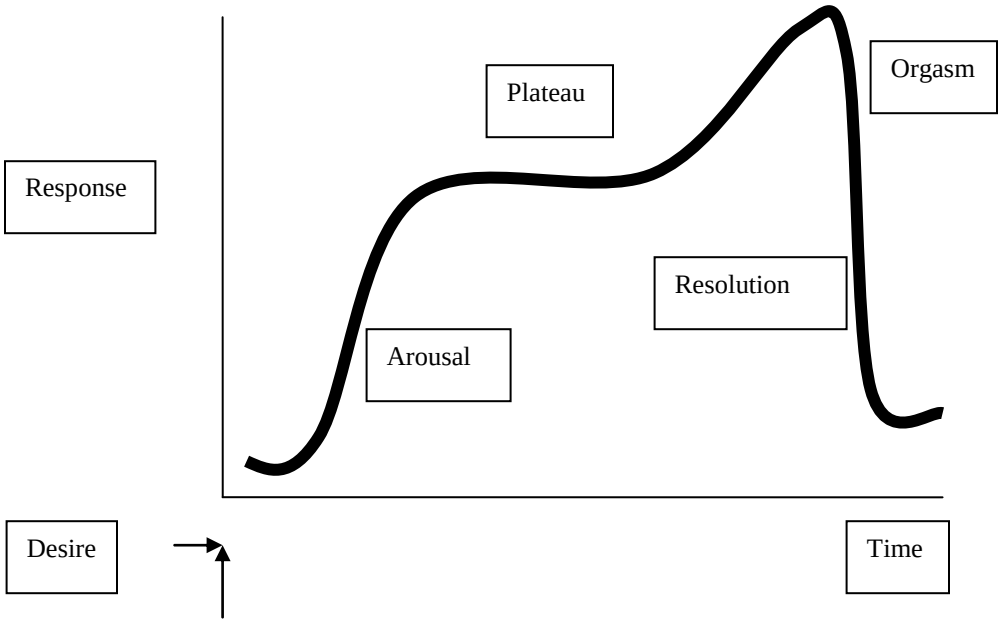

Figure 1 Four phases of human sexual response

via internal pudendal nerves. The efferent impulses are generated in the upper lumbar segment of spinal cord and carried through the sympathetic nerves to the smooth muscles of the vasa deferentia and seminal vesicles causing their contraction. However, the emission of semen out of urethra also requires the contraction of a skeletal muscle bulbocavernosus, mediated by first to third sacral roots. The sympathetic impulses in the meantime terminate erection.

Sexual dysfunctions

The essential feature of the sexual dysfunction is inhibition in one or more phases of the sexual cycle, including disturbance in the subjective sense of pleasure or desire or in the objective performance. Either type of disturbance can occur alone or in combination. Sexual disorders are diagnosed only when they are the major part of the clinical picture. They can be lifelong or acquired, generalized or situational, and due to psychological factors, physiological factors or combined. The dysfunctions may also be attributed to general medical condition or due to use of some drug.

With possible exception of premature ejaculation, sexual dysfunctions are rarely found separate from other psychiatric syndromes. Sexual disorder may lead to or result from relationship problems and patients invariably develop an increased fear of failure and self-consciousness about their sexual performance. Sexual dysfunctions are frequently associated with other mental disorders, such as depressive disorders, anxiety, personality disorders and schizophrenia.

Prevalence

In USA probability sample of 3442 males and females aged 18-59 gave the prevalence of male sexual disorders as follows[2]:

a. Lack of sexual interest 16%
b. Erectile difficulties 29%
c. Premature ejaculation 17%
d. Anxiety about performance 17%

In UK, Dunn *et al*.[3] carried a postal survey of four general practices. Among the patients one third of the men reported with current sexual problem. Erectile dysfunction and premature ejaculation were the most common problems.

In Turkey, 3185 men were interviewed using Florida Sexual History Questionnaire. The prevalence of male sexual dysfunctions (MSD) was 56% in 15-24 years, 35% in 25-34 years, 26% in 35-44 years, 40% in 45-54 years and 72% in men of 55-60 years. The desire problem was detected in 7.3%, erectile problem in 59.7%, ejaculation problem in 52.7% and satisfaction problem in 59.7%.[4]

General causes of sexual dysfunctions

Sexual dysfunctions arise from varying combination of poor general relationship with the partner, low sexual drive, and ignorance about sexual technique and anxiety about sexual performance. Other important factors are physical illness, depressive and anxiety disorders, medications and alcohol or drug abuse. When assessing aetiology in an individual patient, it is important to recognize that both physical and psychological factors are often present.

Psychological causes

a. Anxiety is an important cause of sexual dysfunctions including impotence and premature ejaculation. Sometimes anxiety is an understandable consequence of an earlier frightened experience such as man's failure in his first attempt at intercourse. Sometimes anxiety relates to frightening accounts of sexual relationships received from parents or other people. Once a person develops anxiety about the failure to perform sexual act, it becomes very difficult for him to perform the act normally unless his anxiety is relieved by psychotherapy and/ or medication.

b. Depression is another very common cause of sexual dysfunctions especially impotence. 80% of the patients have mild to severe problem. Long-term psychological problems lead to depression and impotence.

c. Psychoanalytical concepts of Freud attribute erectile dysfunction to faulty interplay between conscious and unconscious thoughts and feelings, and interpersonal relationship among people. Such formulations of impotence recognize anxiety about the "persecutory objects" and unresolved "Oedipal conflicts" during psychosexual development of the individual.

d. In the cognitive concept, erectile disorder is considered to be a sign of negative self-image within a depressive view of a relationship. The sexual anxiety is a result of abandonment fear.

e. Performance anxiety occurs due to fear of failure during sex. The patient is usually "spectatoring", a self-critical monitoring of his body's performance that leads to repeated failures, so that a vicious cycle ensues. This usually

occurs after a solitary failure in sex sometimes back due to lack of interest or exhaustion.

f. Unconscious fear in an adolescent or even in an adult due to guilt brought by strict religious upbringing is a very common cause of sexual failure. People feel embarrassed or sinful to discuss the sexual issues, leading to more frustration or fear. Faith healers and religious therapists exploit such apprehensions to prolong the period of sexual dysfunction so that the generation of income continues. However, such tactics produce devastating effect on the psyche of the sufferer. Small hawkers and book-sellers offer cheap literature in local language which also inculcates phobia of many normal and natural sexual practices including masturbation.

g. Sex abuse in children might lead to conditioning of sexual urge in later life with painful sexual experiences of the past leading to lack of sexual desire.

h. Inclination towards homosexuality, disorders of sexual preference i.e. sexual perversion, fear of pregnancy, physical exhaustion or preoccupation with disturbing thoughts might be other psychological reasons for impotence and erectile dysfunction.

Physical illness

Sexual dysfunctions sometimes date from a period of abstinence associated with pregnancy or child birth, or from debilating effects of physical illness (**Table 1**). Of the diseases that have a direct effect on sexual performance, diabetes mellitus is particularly important. Almost half of the diabetic men experience erectile dysfunctions as a result of either neuropathy affecting the autonomic nerves mediating erection or vascular disorders. Impaired ejaculation also occurs. Sexual dysfunction after myocardial infarction may result from anxiety and side effects of the medicines used rather than physical causes.[5]

Table 1 Medical and surgical conditions commonly associated with sexual dysfunction [6].

Medical
Endocrine
a. Diabetes
b. Hypertension
c. Myxoedema
d. Addison's disease
e. Hyperprolactinaemia
Cardiovascular
a. Angina pectoris
b. Previous myocardial infarction
Respiratory
a. Asthma
b. Obstructive airway disease
Arthritic
a. Arthritis due to any cause
Renal
a. Renal failure with or without dialysis
Neurological
a. Pelvic autonomic neuropathy
b. Spinal cord lesion
c. Stroke
Surgical
Colostomy, ileostomy
Amputation

Drugs

Several drugs have side effects that involve sexual functions (**Table 2**). The most important drugs are antihypertensives (especially adenoreceptor antagonists), antipsychotics (especially thioridazine), monoamine oxidase inhibitors and specific serotonin re-uptake inhibitors. Anxiolytics, sedatives and hormones have more effect on the sexual activity of men than of women. Contrary to the usual belief of the aphrodisiac effects of alcohol, cannabis and

heroin, these drugs are an important cause of impotence.

Table 2 Some drugs that may impair sexual function.

- *Therapeutic agents*
  - Antihypertensives
    - *a.* Diuretics
    - *b.* Spironolactone
    - *c.* Sympatholytics
    - *d.* Alpha-blockers
    - *e.* Beta-blockers
  - Antidepressants
    - *a.* Tricyclics
    - *b.* Monoamine oxidase inhibitors
    - *c.* Specific serotonin re-uptake inhibitors
  - Mood regulators
    - *a.* Lithium
  - Anxiolytics and hypnotics
    - *a.* Benzodiazepines
  - Antipsychotics
    - *a.* Especially thioridazine
  - Hormonal agents
    - *a.* Anabolic steroids
    - *b.* Corticosteroids
    - *c.* Oestrogen
- *Misused substances*
    - *a.* Tobacco
    - *b.* Alcohol
    - *c.* Cocaine
    - *d.* Marijuana (cannabis)
    - *e.* Opium
    - *f.* Heroin

Types of sexual dysfunction

1. Sexual desire disorders

Sexual desire disorders are divided into two groups. The first is hypoactive sexual desire disorder, characterized by deficiency or absence of sexual fantasies and desire for sexual activity. The second is sexual aversion disorder, characterized by aversion to and avoidance of genital sexual contact with a sexual partner or by masturbation. The former condition is more common than the latter and more common among women than males. Patients with desire disorders often use inhibition of desire defensively, to protect against unconscious fears about the sex. Abstinence of sex for a prolonged period sometimes results in suppression of sexual impulses. Loss of desire may also be an expression of hostility to a partner or a sign of a deteriorating relationship.

The presence of desire disorder depends on several factors: decrease biological drive, inadequate self-esteem, and inability to accept oneself as a sexual person, previous bad experiences with sex, non-availability of appropriate partner, and a poor relationship in non-sexual areas with a partner.

Lack of sexual desire may also result from medical causes such as low testosterone levels, high prolactin, systemic diseases and side effects of medications.

Assessment

Sexual desire is assessed by asking about:

a. The frequency and nature of sexual imagery and dreams, and
b. Desire for and the frequency of sexual behavior, with a partner alone.

Potential causes are assessed by asking about:

a. Relationship problems: loss of affection, anger, etc.
b. Sexual orientation and sexual preferences.
c. Tiredness, anxiety and depression.
d. Past sexual experiences causing fear or disgust.

Medical causes listed in **Table 1** should also be considered, including testosterone and prolactin measurement in selective cases,[7] especially when semen analysis reveals decreased sperm count.

2. Impotence

It is defined as male erectile disorder. It may be primary, in which the individual has never been able to obtain an erection sufficient for vaginal insertion or secondary, when an individual has successfully achieved vaginal penetration at some time in his sexual life but is now unable to do so. In situational male erectile disorder, a man is able to have coitus in certain situations but not in others; for example he may function effectively with a prostitute and impotent with wife.

Acquired male erectile disorder has been reported in 10 to 20 percent of all men. It is the chief complaint of more than 50% of all men treated for sexual disorders. Life long male erectile disorder is rare; it occurs in about 1% of men under 35. Alfred Kinsey reported that 75% of all men are impotent by the age of 80.[8]

The cause of male erectile disorder may be organic or psychological or a combination of both. In young and middle aged men the cause is usually psychological. A man may be unable to express a sexual impulse because of fear, anxiety, anger, or moral prohibition. In an ongoing relationship, impotence may reflect difficulties between the partners, particularly when a man cannot communicate his needs or anger in a direct or constructive way. In addition the problem gets worsened when a man become increasingly anxious before a sexual encounter.

Organic causes include abnormalities in the vascular supply to the penile erectile tissue including reduced arterial perfusion, increase venous leakage, and Peyronie's disease.[9] Several physical illness like pelvic surgery,[10] radical prostatectomy,[11] lower urinary tract infection,[12] chronic obstructive pulmonary disease,[13] cardiovascular diseases,[14] smoking[15] and obesity[16] are associated with the complaint of impotence.

A good history is of prime importance in determining the cause of dysfunction. If a man reports having spontaneous erections at times when he does not plans to have intercourse, having morning erection, or having good erection with masturbation or with partners other than his usual one, the organic cause of impotence can be considered negligible and costly diagnostic procedures can be avoided.

Assessment

The following aspects of the general assessment are particularly important:

a. Has there been a previous period of normal function? Erectile failure may be a transient disorder arising at times of stress, or may reflect loss of interest in the sexual partner.
b. Has the failure occurred with more than one partner?
c. Does the erection occur during foreplay?
d. Does erection occur on waking up in the morning, while thinking about sex or in response to masturbation? (Erection in these circumstances suggests psychological causes of impotence).
e. Is there evidence of alcohol or drug abuse?

f. Are there possible effects of any medications?

Special tests for erectile dysfunctions

These include Rigiscan test to help assess penile tumescence and rigidity. Measurements are taken during exposure to visual sexual stimuli, in response to a vibrator or during sleep. This helps in differentiating between psychological and neurological impairment. If a vascular impairment is suspected, Doppler ultrasound and/or duplex ultrasonography may help to identify arterial or venous dysfunctions. Intact vascular supply of the penile tissue is judged by intacavernosal prostaglandin injection.[17]

3. Male orgasmic disorder

This is also called as inhibited orgasm or retarded ejaculation disorder. In this disorder a man either does not achieve ejaculation during coitus or if any then it is with great difficulty. It is labeled as life-long if a man has never been able to ejaculate during coitus or acquired if it develops after previous normal sexual encounters. This disorder also includes those individuals who ejaculate but have a decreased or absent subjective sense of pleasure during orgasm.

The incidence is much lower than premature ejaculation or impotence. Master and Johnson reported an incidence of this disorder as only 3.8% of 447 men with sexual dysfunctions. A general prevalence of 5 percent has been reported.[18]

Life-long male orgasmic disorder indicates severe psychopathology. A man may come from a rigid background and perceive sex as sinful and genitals as dirty; or he may have conscious or unconscious wishes for sexual relationship without involving himself in a serious relationship. In an ongoing relationship, this reflects interpersonal difficulties. It may be caused by drugs including antipsychotics, monoamine oxidase inhibitors and serotonin re-uptake inhibitors.

4. Premature ejaculation

In premature ejaculation (PE), a male persistently or recurrently achieves orgasm and ejaculation before they wishes to. There is no definite time frame within which the dysfunction is defined but the diagnosis is made when a man regularly ejaculates before or immediately after entering the vagina. Masters and Johnson defined the disorder in term of the couple and considered a man a premature ejaculator if he could not control ejaculation long enough during the intercourse to satisfy his partner in at least half of their sexual encounters.[18] An ideal definition or diagnostic criterion must consider several variables like intravaginal ejaculatory latency time (IELT), the ability to control over ejaculation, the extent of male sexual satisfaction, the extent of female sexual satisfaction and the frequency of female sexual partner reaching orgasm.[19]

The Chinese Index of Premature Ejaculation (CIPE) is an ideal tool and criterion used to diagnose PE and to judge its severity. It is based on 5 questions whose answers are given as a scoring system. The questions are as follows:

a. Ejaculatory latency time
b. Sexual satisfaction of the patient
c. Sexual satisfaction of the partner
d. Difficulty in delaying ejaculation, and

e. Anxiety and depression

PE patients are declared as mild (>15 points), moderate (10-14 points) and severe (<9 points). Hence CIPE can be used as a clinical endpoint for clinical trials studying the efficacy of pharmacological intervention.[20]

The disorder is more common among younger than older men, especially during their first sexual relationships. It usually improves with increased sexual experience. It is more commonly reported among college-educated men than among the men with less education. The complaint is thought to be related to their concern for partner satisfaction.

Some researchers divide men who experience premature ejaculation in two groups: those who are physiologically predisposed to climax quickly because of shorter nerve latency time and those who have some psychological cause. The later may occur in those who have anxiety regarding the sex, unconscious fear about the vagina, those whose earlier sexual encounters were with prostitutes who demanded that the sex act to be proceeded quickly or those whose sex contacts took place in situations in which there was a fear of being caught. In all such cases the individuals are conditioned to achieve orgasm quickly. With young inexperienced men, who are more likely to have the problem, it may resolve in time. It is estimated that premature ejaculation is the chief complaint of about 35-40 percent of men treated for sexual disorders.

Assessment

In addition to physical examination and prostate examination; hormone assay, serum leptin assay, semen magnesium assay and glans hypersensitivity measurements are suggested to be performed in the diagnosis of PE. Serum leptin assay seems promising and objective marker to diagnose PE because it is related to the serotonergic system whose disorder has been confirmed to contribute to the aetiology of PE.[19]

5. Dhat syndrome

According to International Statistical Classification of Diseases and Related Health Problems (ICD-10), Dhat syndrome is defined as undue concern about the debilitating effects of passage of semen in urine or as nocturnal emission. It also includes the fear of passage of prostatic secretions alone or with fluid from seminal vesicles which might occur idiopathically in few people or as a result of excessive straining during constipation. Drops of inflammatory fluid or pus due to urethritis are also a cause of concern in those with recurrent urinary tract infections.

It is considered as a culture bound syndrome of Indian subcontinent,[21] but it was reported in 30% men attending a medical clinic in UK, and it is suggested that it should rather be considered as culturally-determined symptom associated with depression.[22] The basis of the syndrome is that most part of the society considers loss of semen as harmful. This belief is stronger in lower socioeconomic classes. It is believed that semen is elixir of life in both its physical and mystical sense. In a study it was found that 39.5% patients with this syndrome are suffering from depression, 20.8% from anxiety while 31.3% had no psychiatric

diagnosis. The most common symptom is weakness (70.8%), fatigue (68.7%), palpitation (68.7%) and sleeplessness (62.4%).[23]

6. Masturbation

It is usually a normal precursor of object-related sexual behavior. No other form of sexual activity has been more frequently discussed, more roundly condemned and more universally practiced than masturbation. Research by Alfred Kinsey[8] into the prevalence of masturbation indicated that nearly all men have masturbated sometime during their lives.

With the approach of puberty, there is an upsurge of sex hormones and the development of secondary sex characteristics. As a result sexual curiosity increases and leads to masturbation. The conflicting pressure of establishing their sexual identities and social inhibition on the sexual impulses produce a strong physiological sexual tension in teenagers that demands release and masturbation in order to reduce sexual tension.

Moral taboos against masturbation have generated myths that masturbation causes physical weakness, mental illness and decreases sexual potency. However, no sexual evidence supports such claim. Masturbation is psychopathological symptom only when it becomes a compulsion beyond a personal willful control, then it is a symptom of emotional disturbance, not because it is sexual but because it is compulsive. Masturbation is probably a universal and inevitable aspect of psychosexual development, and in most cases it is adaptive.

General approach to the assessment of patients with sexual dysfunctions

History taking

Whenever possible, the sexual partner should be interviewed along with the patient. The following inquiries are important:

a. Define the problem as it appears to each partner.

b. Origin and course. Has the problem always been present or did it start after a period of normal functioning?

c. Has the problem occurred with more than one partner?

d. Strength of sexual drive is assessed by asking about the frequency of intercourse and masturbation, sexual thoughts and about feelings of sexual arousal.

e. Knowledge of sexual technique and concepts. It is important to clarify misinformation by asking about the patients views about sexual techniques, sex education and sexual experiences.

f. Social relationship with the partner. Is the partner shy or socially inhibited? Is there any marital conflict?

g. Psychiatric disorder. Is there any psychiatric disorder in either of the partners?

h. Misuse of alcohol or any of the drugs mentioned in **Table 2**.

i. History of any medical or surgical illness, with particular reference to **Table 1**.

Physical Examination [24]

General Examination (with particular reference to diabetes mellitus, thyroid or adrenal disease)

a. Hair distribution
b. Gynaecomastia
c. Blood pressure
d. Peripheral pulses
e. Ocular fundi
f. Reflexes
g. Peripheral sensations

Local Examination

Penis
- *a.* Congenital abnormalities
- *b.* Pulses
- *c.* Tenderness
- *d.* Infection
- *e.* Urethral discharge

Testis
- *a.* Size
- *b.* Symmetry
- *c.* Texture
- *d.* Sensation

Prostate

In men aged over 50 years

Laboratory tests

a. Fasting blood sugar
b. Serum testosterone
c. Serum sex-hormone binding globulin
d. Serum luteinizing hormone
e. Serum prolactin

Psychological treatments of sexual disorders

Master and Johnson's sensate focus therapy

Ideally, behavioral treatments for the couple are based on the principles of Master and Johnson's sensate focus therapy.[18] This is most effective if the cause of sexual dysfunction is psychological, but has a role in organic diseases, as well. Master and Johnson have claimed good results with 60% cure rate for impotence and 80% for premature ejaculation. Relapse rate in next 5 years is 11% and 5%, respectively.

Clinical writings by Master and Johnson involve both the partners in therapy. They encourage the concept of "co-therapist" i.e. a male and female therapist should deal with couple, around a round table. The couple usually stays in a hotel away from the domestic worries (honeymoon atmosphere). The therapy is instituted in four stages, which are:

a. *Introductory stage* It includes detailed history, examination and explanation. Open discussions are made involving sexual knowledge, experiences, preferences, fantasies, expectations and experiences of pleasure. The couple is encouraged to disclose any reservations, fears or dislikes. A good deal of communication is the basis of effective management. At this stage important instructions are given to both the partners for subsequent phases of treatment, which they have to carry out in the privacy of their hotel room. However, they see the therapist daily to discuss the outcome and clear any doubts.
b. *Sensate focus stage* In their hotels room, they initially have a ban on intercourse. They explore each other bodies by caressing and kissing, but they cannot touch genitals and breasts. The aim is to rediscover the sensations of touch, smell and body contact and to learn how to get pleasure by giving pleasure. This is continued for a few days (1-7) depending upon couple confidence and satisfaction.

c. *Genital sensate focus stage* Once the couple becomes master of non-genital caress, they are allowed the genital contact. However, the ban on intercourse continues. The same principle of "give-to-get pleasure" also applies here. Ejaculation and orgasm are also avoided. By this time the male has sufficient erection and urge for intercourse. After a few days (1-3), the couple moves to specific techniques as required by their sexual dysfunctions.
d. *Specific techniques* For premature ejaculation the couple adapts "Seman's technique" in which the wife teases and caresses the penis until it is erect and then squeezes the junction of glans and shaft, until the urge to ejaculate abates and erection is partially lost. This is repeated many times and later combined with penetration in female-superior position.

For impotence teasing is used, and the female takes the responsibility of erection and penetration, relieving the male of all the sexual anxieties. Female superior position is used so that the male does not have the apprehension of positioning for intercourse. Initially they do not move and just get the feeling of penis inside the vagina and enjoy it there. After a few minutes they take out the penis only to re-introduce it again after teasing. After a few times the couple can start the sexual movements and ejaculate inside the vagina.

Important aspect of these specific techniques is that the female is encouraged to take the responsibility of erection, penetration and timings, so that the male is relieved of his traditional anxiety of performing the sexual act.

The improvement is worthwhile in a third of cases who follow the therapy whole heartedly and satisfactory in another third of the cases.[25] The results are significantly better in problems of longer duration.[24]

Other treatments of specific sexual disorders

This includes physical methods like drugs, injections, creams or devices. The specific treatment in accordance to the problem is given below.

1. Sexual desire disorder

Due to lack of controlled trials the treatment is mainly based on clinical experience.

a. Any psychiatric or medical cause should be treated.
b. Couple therapy, cognitive therapy or counseling may be chosen depending on the psychiatric cause.
c. Testosterone increase desire in patients with low levels of the hormone but there is no evidence that it has any significant effect on increasing sexual desire in individuals with normal testosterone levels. It is more effective if given parenterally; however, effective oral preparations are available. In men, prolonged use may cause hypertension and prostatic enlargement.

2. Impotence

Any reversible cause should be treated. Psychological causes may respond to appropriate psychodynamic therapy, although temporary relapse may occur.[24]

a. *Oral medication*

- *Phoshodiesterase type-5 inhibitor* Sildenafil (Viagra®) came as a breakthrough in the treatment. It inhibits the breakdown of cyclic GMP by specific cyclic GMP phosphodiesterase. Since the drug potentiates the actions of cyclic GMP greater than having an impact on its production, it facilitates rather than initiates sexual arousal. The effectiveness of this drug has been over publicized. In a cohort study on 726 subjects who received the drug, the response rate was only 67%.[26]
- *Vardenafil* was tried in a randomized, placebo-controlled double-blind trial in USA and Canada comprising of 440 men at 58 centres. Results showed that 10-20 mg vardenafil daily was significantly superior to placebo for sexual satisfaction and orgasmic function and significant improvement in penile hardness during erection compared to placebo ($p<0.0001$).[27]
- *Tadalafil* 20 mg daily was used in erectile dysfunctions in Australia in a randomized double-blind placebo controlled study. The results were 78% effectiveness with tadalafil treated group as compared with placebo.[28]
- *Alpha-adrenergic blocker* Before the introduction of sildenafil, the main oral medication for male erectile disorder was yohimbine (Vigrol Forte®) which is an alpha-adrenergic blocker.
- *Traditional herbal medicines* are now well incorporated in several preparations for sexual disorders. Thirty-three medicinal plants were short-listed which have positive impact in sexual impotence and erectile dysfunctions. Among these *Citropsis articulate* and *Cola acuminate* are among the highly utilized plants.[29]

b. *Treatment for vascular or neurogenic causes* Several treatments are available for patients with impotence due to vascular or neurogenic abnormalities, including those secondary to diabetes. These include drugs, vacuum devices, surgical correction of vascular abnormalities and penile prosthesis.

- *Intracavernosal injection* of smooth muscle relaxant i.e. papaverine or alpha-receptor blocker phenoxybenzamine,

produces erection and has been used in the treatment of impotence.[30,31] Similar effect has also been achieved with prostaglandin injection.[32] Alprostadil (Caverject®), a newer drug, has been used with success.[33] It is started with small doses and the dose is gradually increased till the desired erection is achieved. The patients are then taught to inject themselves.

- *Intraurethral treatment* Alprostadil (Caverject®) can both be administered intraurethrally[34] as well as by intracavernosal route. It should not be administered more than once a day and thrice a week.
- *Vacuum devices* can be tried for patients not responding to intracavernosal drug injection.[35] A cylinder is placed over the penis, in which pressure is reduced and hence creating a vacuum. Erection is induced, which is maintained by applying a restricting band at the base of the penis before the cylinder is removed. Although it is an effective treatment, it is generally disliked by many patients.

c. *Surgical methods* Microsurgical techniques can be used to revascularize the corpora cavernosa when there is stenosis or occlusion in the arteries. Short term improvement in about 50% has been reported.[36] An alternative approach is to insert a penile prosthesis, which may be semi-rigid or capable of being inflated before intercourse.[37,38]

3. Male orgasmic disorder

This disorder is usually associated with general psychological inhibition about sexual relations, but it may be caused by drugs including antipsychotics, monoamine oxidase inhibitors and specific serotonin uptake inhibitors. Psychotherapy and stopping the above mentioned drugs may relieve the patient with the problem.

4. Premature ejaculation

First of all the psychological causes if any may be taken care of and treated. The drug treatment is no doubt the mainstay of the treatment. These include:

a. Selective serotonin-reuptake inhibitors (SSRIs) These drugs very effectively increase the ejaculation latency time compared with placebo,[39] but are characterized by relapse once the medication is stopped. The group includes fluoxetine (Prozac®, Rize®), paroxetine (Seroxat®), sertraline (Zoloft®), citralopram (Ciprilax®) etc. They are effective in young patients with hyper-orgasmic forms.[40] Among the SSRI's, paroxetine is the most effective.[41] The drugs have been used as daily doses or on-demand basis. The results are conflicting.

In one study paroxetine in 20 mg daily dose was found equally effective than 20 mg dose 4-6 hours before the intercourse[42]; while in another study daily treatment with SSRI's was found more effective than on-demand treatment.[43]

b. Phosphodiesterase (PDE)-5 inhibitors these include sildenafil, tadalafil and vardenafil. These drugs delay the ejaculation time by both their peripheral and central mechanisms. The peripheral mechanisms include modulation of contractile response of the vas deferens, seminal vesicles, prostate and urethra and induction of a state of peripheral analgesia and the central mechanisms may involve lessening of central sympathetic output.[44] Combination of SSRI's with sildenafil produce significantly better results than SSRI's alone.[45] The PDE-5 inhibitors are more effective in old age or when premature ejaculation is associated with erectile dysfunctions.[40]

c. Tricyclic anti-depressants Clomipramine (Clomfranil®) is found equally effective than SSRI's in the treatment of premature ejaculation.[46]

d. Topical anaesthetic creams Use of lidocaine-prilocaine solution compared with an inert cream immediately before the intercourse significantly increases the intravaginal ejaculatory latency time.[47]

e. Physical methods In 'squeeze technique' as the man achieve orgasm the female grips the penis for a few seconds and then releases it suddenly. In 'stop-watch' method the female attempts to regulate the amount of sexual stimulation during intercourse. In 'quiet-vagina' technique the penis is contained in vagina for increased period without movement. In all such methods the cooperation of sexual partner is must.[37]

5. Dhat syndrome

Improving the level of sex education and explaining in detail that semen loss or the prostatic secretions is not harmful to health, helps in many patients. However, most of them require anti-anxiety or antidepressant drugs for some time.[23]

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