Sexuality in the aging woman, the man and the couple

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ABSTRACT

Sexual health is an important part of the general health also in aging men, women and couples. Sexual health is determined by a complex interaction of biological, psychological and sociocultural factors of the individual partners and their sexual and intimate interaction in the relationship.

Sexual difficulties and problems need therefore a biopsychosocial approach in diagnosis and therapy. For the individual, the diagnosis includes the sexual history to clarify and define the problem, the medical and psychosocial history.

Problems and resources of the couple are assessed inviting both partners to the consultation.

Various therapeutic strategies are now available, all of them should be applied in the framework of a comprehensive therapeutic concept.

This includes listening, information and education in a respectful and accepting atmosphere. Medical interventions, reaching from systemic and local hormones to drugs interacting with the sexual neurophysiology may be indicated as well as various psychosexual therapies which have to be tailored to the individual and the couple.

KEYWORDS

Age, sexual health, biopsychosocial understanding, sexual history taking, communication and counselling.

Introduction

The sexual health of the aging woman, the man and the couple have been considered for a long time either as a taboo or as a non-medical life style luxury issue. With all the important problems of aging such as immobility, intellectual decline, incontinence, isolation, pain etc., the sexual life of the elderly did not seem to have an important impact on general health and or quality of life [1]. A more evolutionist approach claims that after the reproductive phase sexuality loses an important biologic motivator, a lack that may manifest itself in the decreasing or even disappearing importance of sexuality for older people.

There may however be some biases in this concept: Sexual problems have always been a matter of shame, non-disclosure and uneasiness, which may have contributed to an underreporting of these problems. Another bias may come through social perception and culturally determined aestheticism. It is socially not desirable and therefore less researched.

But things seem to be in a phase of change. Several reasons are to be noted:

- The growing rate of older people without major health impairment leads to some reconsideration and re-discussion about the importance of sexual health of this population [2,3].
- The development of medications designed specifically for sexual dysfunction, which occur mainly in the older population, has tremendously increased the interest of important professional groups into the issue of sexuality in the aging people [4,5].
- The spreading knowledge about sexual aids has made aging men and women aware of therapeutic possibilities and has increased the demand [3].

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- Sexuality is being reconsidered as having possible different health related functions in the elderly population: decrease tension, create closeness to another person, recreation instead of procreation, joy and pleasure as part of mental health [6,7].

What do studies say

Women

In a review of the literature Hayes and Dennerstein summarize the findings concerning women [7]:

- In women there seems to be a decline in the frequencies of sexual activities with age [7,8].
- It seems that a woman's sexual function starts to decline sometime between her late 20s and her late 30s, a decline mainly in sexual desire and sexual interest.
- The frequency with which women experience orgasm seems also to decline with age, but there is a large variability.
- Arousal may decrease with age or remain constant.

But

- The number of sexual difficulties and dysfunctions women report remains fairly constant with increasing age, the excep-

tion being sexual pain which appears to increase.
- Difficulties in achieving orgasm consistently show no association with age.
- Arousal difficulties seem to increase, decrease or remain constant during aging.

This means that the age-related decline in different aspects of a woman's sexual life is not associated with an increase in self-reported dysfunctions, which may be either explained by the observation that the importance of sexuality for women seems to decrease with age [9], or that women do not want to disclose their sexual difficulties.

Men

The Massachusetts Male Aging Study (MMAS) [10] and the National Health and Social Life survey [11] report the following findings about age related changes in male sexuality:
- Sexual dysfunction, presenting as erectile impotence, diminished libido, or abnormal ejaculation, first emerges as a problem for men in their early 40s and increases with advancing age.
- At age 40, 40% acknowledge some level of impaired sexual function and another 10% recognize a waning sexual prowess or interest with each succeeding decade.
- A nine-year follow-up study of the MMAS cohort confirmed the age – associated declines in most domains of sexual function: Sexual intercourse, erection frequency, sexual desire, satisfaction with sex and difficulty with orgasm [12].
- There seems to be a sharp decline in overall sexual function, desire and orgasm by decade after age 50 [13].

The couple

There is much less information about the sexuality of couples during the aging process. It has been shown in several studies that the length of the relationship is correlated to a decline in the frequency of intercourse and a decline in sexual desire and interest [14-16].

It is also evident that the sexual expression of one partner has an important impact on the sexual life of the other partner. A frequent reason for cessation of sexual activities in women are sexual problems and dysfunctions of their male partners [17]. In one study of 534 Chilean women aged 40-64 years the most common reason given for ending sexual activities was partner erectile dysfunction in women younger than 45 years, low sexual desire in women 45 to 59 years, and lack of partner for women older than 60 [18].

Aging and sexuality

Aging as a biopsychosocial process impacts sexuality in various ways:

a) Age related organic and metabolic changes specific for men and women influence sexual function:
   - Degenerative changes in the vascular supply may lead to a decreased capacity of dilatation of vessels with subsequent dysfunctions in the arousal phase of men and women with clinical manifestations of erectile dysfunction or diminished lubrication [19-21].
   - Metabolically induced deterioration of neuronal function may result in decreased sensibility and neurovascular and neuromuscular reaction with negative impact on sexual receptivity and response to stimulation [22-24].
   - Decline of sex steroid hormones may be accompanied by a decrease of the biologically determined part of sexual drive and/or lead to changes in genital mucosa resulting in discomfort and pain [25-28].
   - The increased general morbidity and the increased use of medication play an independent biomedical role in the pathogenetic mechanisms that may lead to the impairment of sexual function [29-37].

b) Age-related affective and cognitive changes impact on sexual function in both gender:
   - Depressed mood in many clinical variations is a leading cause of sexual dysfunction as well as the use of antidepressant drugs [38-41].
   - Deterioration of cognitive function and difficulties to communicate can cause loss of intimacy and emotional closeness which then may result in sexual withdrawal and difficulties. Repetitive experiences of failure increase personal vulnerability, performance anxiety and distress [42,43].

c) Age, and the duration of related changes in the couple's dynamic interaction, have an independent influence on both partner's sexual life (see above).

There are different possible responses to these changes

The first consists in withdrawal from sexual activity consented by both partners. This decision for a "sex free" life together is in general not harmful to the health of both partners.
Ex: In John and Mary's marriage sex has never been a very important part of their relationship. It was much more about emotional intimacy, togetherness, stability and building a family with kids.

The second response is withdrawal from sexual activity by one partner but not by the other. This discordant decision with respect to the couple's sexual life may have harmful consequences like chronic tension, deterioration of other aspects of the couple's life or even extramarital affairs. The withdrawing partner may become a patient presenting with a lack of desire, which is not experienced as a personal distress but much more as a threat to the relationship.
Ex.: The 58-year-old female patient presents with Hypoactive Sexual Desire Disorder (HSDD). During further exploration it becomes clear that she would rather lead a life without sex, but that she sees her husband suffer and that she is afraid of losing him.

The third response is the active search for help by one partner who experiences age related changes in her or his sexual function, distressing her/him, while the other partner considers herself/himself free of sexual problems. The symptomatic partner wants to re-establish a better quality of her/his sexual life. The partner's view of the importance of the sexual dysfunction may vary considerably from very important to not important at all.

Ex.: John is suffering from a loss of erectile strength. He enjoys sex much less, feels much less male and less satisfied after intercourse.

The fourth response to age related changes is that both partners suffer from these changes and they seek active help.
Ex.: Sarah, a 61-year-old patient, has been experiencing difficulties in arousal, orgasm and sometimes pain during intercourse for many years. She did not talk about these problems with Jack who initiated sex usually but had developed also over the years erectile dysfunction which had led him to gradually decrease his sexual initiatives. When Sarah discovered that Jack used pornographic material for masturbation, she felt alarmed and shocked and confronted her husband with her anger and frustration. They both realized that they would need some help and Sarah talked about their problems with her gynaecologist.

From these examples it becomes quite evident that there is no standard sexuality of the aging male, the female and the couple but there are several independent but interacting factors that determine the phenomenology of the individual's and couple's sexual life:
- The sexual scripts of the individuals and their shared relationship script.
- The type and intensity of the age-related biopsychosocial changes of the man and the woman.
- The type and intensity of the age and duration related changes of the relationship.
- The way the individuals cope with these changes (their individual and their relationship resources).

Sexual health of the elderly – the specific challenges

Looking at the empirical data and the basic considerations it becomes evident that the sexual health of the elderly male, woman and couple is the result of a complex interaction of biological, psychological, relational and sociocultural factors. Caring for the sexual health of this group of patients has to deal with some basic facts, which vary among individuals and couples:
- Physical morbidity (including treatment).
- Psychological morbidity (including treatment).
- Sexual dysfunction frequently multidimensional.
- Sexual dysfunction in both partners.
- Possible discrepancy of the personal development of the partners.

The multidimensional diagnostic approach

To be able to understand the sexual problem of the individual and the couple it is necessary to apply a diagnostic procedure that combines sexological, biomedical, psychosocial and systemic knowledge and approaches.

This is done in a semi-structured interview going through different phases.

Sexological descriptive diagnosis

The first step is the establishment of a descriptive diagnosis of the sexual dysfunction according to the different nosological entities given in International Classification of Diseases (ICD) or Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [44,45]:
- Disorder of motivation (HSDD or aversion).
- Disorder of arousal (erectile dysfunction in the male, emotional and/or physical arousal disorder in the female).
- Disorder of orgasm (precocious ejaculation or *ejaculatio retardata* in male, anorgasmia in women).
- Pain disorders (pain before, during or after intercourse in both sexes).

Is there one dysfunction or several dysfunctions combined?

Both classification systems demand that the dysfunction described leads to personal distress or interpersonal difficulties. It is important to assess the degree of distress and severity of the difficulties as well as the duration of the problem and the contributing factors observed by the patient(s) themselves.
The most frequent complaints in women are (see above):
- HSDD, arousal and orgasm disorder.
- Frequently a pain disorder which may precede other dysfunctions.
- Dissatisfaction with sexual life and sexual partner.

The most frequent complaints in men are (see above):
- Erectile dysfunction.
- Premature ejaculation.
- Lack of sexual desire and general dissatisfaction.

Sexual problems are as mentioned above almost always conditioned by several factors. It is therefore necessary to make an assessment of conditioning factors which includes biomedical and psychosocial factors. These factors can be preferably subdivided into factors that date back in the individual history (predisposing) and factors that are of more recent or even of actual origin.

Biopsychosocial assessment of the woman

Important biomedical factors:
- Cardiocascular disease
  – Hypertension
- Rheumatic disease
- Obesity, metabolic syndrome
- Diabetes
- Depression and anxiety disorder
- Drugs
- Postmenopause
  – Oestrogen/Androgen-deficiency
- Cancer

Rather **frequent conditions predisposing** to female sexual dysfunction are hypertension, obesity, diabetes and rheumatic disorders. Especially thiazide containing medications have a

negative impact on sexuality.

Other predisposing factors for the development of sexual dysfunctions are affective disorders like depression and anxiety which by themselves or through the necessary medication may contribute to HSDD and arousal disorder and which are more frequent in middle age and older women than in men. In many women, in this age group, the menopause related estrogen and/or androgen deficiency is **a precipitating factor of female sexual dysfunction (FSD).** The typical symptoms of estrogen deficiencies are hot flushes, palpitations, sleep disturbances [46]. Signs of androgen deficiency may be lack of energy, depressive mood, muscular weakness, diminished sexual desire [47].

Unfortunately, a rather large number of women suffer from breast cancer and the treatment of this disease may both have a dramatic negative impact on the sexual life of women [24].

Important psychosocial factors:
- Negative expectations, performance anxiety
- Personality characteristics
  - Anxious
  - Dependent
  - Obsessive-complusive
- Negative stories
  - Separation
  - Trauma
- Loss of self esteem
- Loss of autonomy and dependence

Predisposing are biographic events with a traumatic impact like sexual abuse, violence, humiliation, experiences of separation, abandonment [48]. Certain personality characteristics like anxiety, dependence, obsession predispose also to FSD [49].

The female midlife transition may bring new life situations which may act as precipitating factors like subjective loss of attractiveness and negative body image, loss of self-esteem. Negative expectations and performance anxiety can in a self-enforcing way maintain the sexual problems [50].

Important sociocultural factors:
- The male dominated model of sexuality
- Double standard of aging
- Rigid role model
- Lack of learning possibilities
- Norms and education

An important predisposing factor for FSD is a sexual education or non-education which "teaches" rigid norms and roles and leaves very little room for self-exploration and self-determination. Good girls are timid, withdrawn, controlled, mature and do not have explicit sexual fantasies. Sex is for marriage and reproduction and not for pleasure.

Media messages, literature, art and even scientific research transmit a model of human sexuality which is very much oriented towards male sexuality. Predominance of visual stimulation, focus on intercourse, linear model of sexual reaction reflects male sexual needs and experiences. Women's needs and experiences are socially much less represented and may therefore contribute to women's sexual insecurity and finally dissatisfaction. Part of this social representation of sexuality is what has been called the double standard of aging. This means, that aging men are viewed as maintaining or even increasing their attractiveness, whereas aging women lose attractiveness and beauty [50].

Biopsychosocial assessment of the male

Important biomedical factors:
- Cardiovascular disease
- Diabetes
- Obesity
- Prostatic disease
- Depression
- Neurologic disorders
- Musculosceletal disorders

Predisposing factors in men are with a very high prevalence cardiovascular and metabolic diseases (diabetes) which impact the neurovascular sexual response [51-54]. Some of the frequently used drugs (i.e., antihypertensives, anti-depressants) act on the neurovascular or neuromuscular sexual response and have a negative impact on male sexual function [55,56]. Alcohol abuse and smoking are also rather frequently occurring predisposing factors for male sexual dysfunction (MSD) [57]. Prostatic disease is a frequent precipitating factor of MSD [58,59], with variable reports about the incidence of post treatment MSD. In men, other precipitating factors also include depression, antidepressant treatment, neurologic and musculoskeletal disorders [60].

Important psychological factors:
- Negative expectations, performance anxiety
- Professional stress
- Traumatizing experience
- Loss of self esteem
- Loss of autonomy and dependence
- Rigid male norm sexuality education
- Stern religious education

Male sexual education is frequently situated between the concepts of ..sinful, dirty sex" and role models of ..macho sexual performance" with male competitive aggressive behavior. This may be in contrast to what male adolescents feel about themselves and again may inhibit them to develop their own script so that they follow an alienated script, which especially in midlife and later may predispose to MSD [61].

Later in life, biological variation determined "failures of performance" may be experienced as catastrophic and severely damage self-esteem and the feeling of male identity. Combined with professional stress and threats, these changes can provoke and maintain MSD [62].

Important sociocultural factors:
- Myths about male sexuality
- Men always want and can have sex
- Performance and function oriented ideal
- Fixation on the standard model of sex

Although the sociocultural model of sexuality is mainly male dominated, this does not mean that some men do not suffer from demands and norms that come from this model. Especially the performance and function oriented ideal puts pressure on man and may induce feelings of inferiority if they do not correspond to the standard and to what is considered typical for men like "men always want sex and they are always ready for sex", "sex must always end with intercourse and orgasm" etc. [61].

The systemic, couple-oriented diagnosis

In a sexual relationship two individuals meet each one having his or her sexual wishes, fears, concepts of love, potencies and temperament. Falling in love means that both partners experience a state of mind in which they feel an almost perfect fit between their respective sexual needs, they feel an urge to be very close, to be always together, to merge with the other. This phase is invariably associated with idealization of the partner, whose virtues predominate, and the sexual interaction is almost automatic and does not need many words. Later in the relationship both partners become separate individuals again, with their individual needs [63-65].

They become individuals who must face two challenges:

- They must find a balance between their wish for self-realization (autonomy, freedom, independence, self-development) and their relationship-oriented needs (bonding, trust, affiliation, stability).
- They must cope with the "reality" of the other, his or her unknown, undiscovered parts also with respect to sexuality [66,67].

In longstanding relationships, both partners have to work continuously to negotiate and find a balance between [68-70]:

- Sameness and difference
- Bonding and freedom
- Relationship stability and individual development
- Give and take

To find these dynamic states of equilibrium the individuals need some capacity of introspection, self-acceptance and self-knowledge on one side and communicative skills and repair mechanisms on the other side [71].

There are risk and protective factors which should be part of the diagnostic assessment:

- Risk factors
- Habituation, routine
- Lack of flexibility due to fear of instability
- Chronic conflicts
  - Give and take
  - Dominance and dependence
- Large differences in the individual development
- Loss of attractiveness
- Third person involvement and jealousy
- Destructive patterns of interaction

Predisposing for relationship dysfunctions which may impair the sexual life of the partners are habituation and routine, which make sexual life less and less enjoyable and attractive to both partners. If there is a lack of phantasy or flexibility of sexual behavior, due to an excessive fear of any change that may endanger the stability of the relationship, this routine impact cannot be overcome [63,64].

Other predisposing factors are preexisting unresolved chronic conflicts about give and take, dominance and dependence as well as large differences in the individual development of the partners which all may contribute to an alienation and loss of sexual intimacy [66-68].

An age-related loss of attractiveness may act as a precipitating factor sometimes leading to extramarital affairs and jealousy. Destructive patterns of interaction are reproach, justification and blocking [71]. They maintain the distance and may aggravate the difficulties.

Couples' resources:

- Intimacy
- Experience
- Shared life story
- Sympathy, solidarity
- Diminution of stress of performance and competition
- Patience
- Compensatory activities and new ways

There are not only relationship dependent risk factors for FSD and MSD but couples also have resources for resolving problems and repairing damage. An important longstanding resource is the shared life story, shared experiences and above all a long-term cultivated emotional intimacy, which all contribute to respective empathy and solidarity. These factors may lay grounds to dare to explore new ways in the couple's sexual life, to redefine one's sexual identity and to disclose it to the partner. A positive aspect of aging is thereby the possible decrease of performance stress and competition and the increased composure and patience [63,64,71].

The sexological descriptive classification, the biopsychosocial profile of the individuals and the characteristics of the couple's interaction together provide a comprehensive and explanatory diagnosis of the sexual (ill) health of the woman, the man and the couple.

Therapeutic process and interventions

The first important step in dealing with the sexual problems and dysfunctions is what we call a round table with the couple. This round table discussion serves the purpose to discuss with both partners the following questions and issues:

- What does the status quo look like and what are possible advantages of the actual situation?
- What are the benefits and risks if the sexual problem disappears?
- What exactly should change and what should stay the same?
- What can he/she change himself/herself?
- What must be accepted by him or her?
- Replacing 100% objectives by stepwise approaches (50% could be fine)
- Rehabilitation instead of therapy

The explicit discussion of the objectives of therapy is a prerequisite to clarify the individual woman's and man's desired changes and whether these wishes coincide or not. The communication about these issues helps the couple understand the possible "function" the sexual problems had in maintaining a status quo and also maintaining stability. Therefore, some desired changes may on a second look cause anxiety and may carry some risks. It is also important to find out who should change, how and what should remain the same, or what has to be accepted as a non-changeable reality. Frequently the unspoken wish to reestablish the sexual life of 50 years ago can thus be questioned and more moderate objectives or stepwise approaches can be discussed.

Today there are several therapeutic options for aging women, men and couples, which have to be tailored to the individual clinical situation summarized by the comprehensive diagnosis.

Basic counseling and information giving

Many couples are not aware of the physiology and the psychology of sexual function and sexual intimacy. Explaining how aging has an impact on this and how other individuals and couples experience these changes is an important step in empowering the couple to better understand what happens to them and to feel less irritated, insecure and stressed. It allows the physician to diminish the shame and difficulties associated with a talk about sexuality and thus may provide emotional relief. Part of this psychoeducational effort is the clarification and correction of the sociocultural myths and prejudices described above and the encouragement of the couple to define their very own sexuality.

Becoming aware and possibly redefining the sexual scripts

As described above, physicians and counselors may help the couple to become more aware of their often only semiconscious sexual scripts, which are not only partially unknown to themselves but frequently completely unknown to the partner. Helping the couples to become their own author of the script, which may be rewritten and modified according to the changes of aging, is an important step to actively involve the couple in the therapeutic process.

Biomedical interventions

Women

Different therapeutic options are available.

Systemic estrogen (oral or transdermal) combined with progestogen is indicated in sexual dysfunction (desire and arousal disorder, pain disorder) linked to climacteric symptoms like hot flushes, sleep disturbances, palpitations, depressed mood, urogenital symptoms [72-74]. In women, after hysterectomy with the same symptoms, estrogen only therapy can be used.

Several studies have shown that estrogen alone is not able to treat all sexual symptoms effectively but that the addition of testosterone increases the effectiveness, especially for desire and arousal disorders [75-77]. The main indication for this combined treatment is in women after bilateral ovariectomy but recent studies indicate that this treatment may also be effective in women after natural menopause provided that there is an androgen deficiency [78,79].

The absolute and relative contraindications to long term estrogen alone, combined estrogen/progestogen and androgen treatment have to be taken into account [80,81].

Absolute contraindications are the presence of cardiovascular diseases (myocardial infarction, thrombosis, cerebrovascular accidents, etc.), breast cancer, acute liver disease. Relative contraindications which demand clinical judgement are a combination of cardiovascular risk factors (hypertension, obesity, etc.), age over 65, and /or genetic risks for breast cancer. It seems however that in women in the age group between 45 and 65 with climacteric symptoms and symptoms of androgen deficiency especially after ovariectomy, systemic estrogen/progestogen and androgen therapy is a valuable option in which the possible benefits outweigh the risk by large.

It is known that some of the risks described above are dependent on the duration of treatment. For the moment it is not known whether there is a defined time limit of treatment. It seems however necessary to reevaluate the indication of the treatment each one or two years.

An alternative treatment is the use of tibolone which has proven effective in women with HSDD [82,83]. The safety of tibolone is still under investigation and some controversial results have been reported. A positive characteristic of tibolone is the decrease of breast density found in mammograms of women using tibolone. As breast density is considered a risk factor for breast cancer and as the mammographic detection of early cancers is more difficult in dense breast tissue, this property of tibolone has been considered positive [84]. In the Million Women Study, however, a slight increased risk for breast cancer was found in tibolone users [85].

Pain disorders in women due to atrophy of the vaginal mucosa respond very well to local estradiol or estriol treatment. Local estriol therapy does not demand additional progestogen therapy and can be applied even in women after treatment of breast cancer [86,87].

Sildenafil has been investigated in women with arousal disorders with variable and partially controversial results. It seems that there is some effect in the physical arousal disorder [88,89].

Men

The use of phosphodiesterase type 5 (PDE-5) inhibitors to treat erectile dysfunction in men is a major breakthrough in the biomedical treatment of MSD. The therapy has proven effective in erectile dysfunction caused by different pathogenetic mechanisms such as diabetes, post-prostatectomy, age related vascular insufficiency, drug induced etc. [90-97].

Three PDE-5 inhibitors - sildenafil, vardenafil and tadalafil – are now approved for the treatment of erectile dysfunction. They inhibit the cGMP-specific isoform 5 of the phosphodiesterase, resulting in cGMP accumulation, which for example in smooth muscle cells, reduces muscular tone. In the cardi-

ovascular system they slightly reduce arterial systemic blood pressure. This moderate effect was also shown in combination with many antihypertensive drugs.

The important contraindication is the concomitant use of PDE-5 inhibitors with any drug serving as nitric oxide donor, as this combination can lead to significant arterial hypotension. Caution is needed in patients on alpha blocking agents. In general, this class of drugs was not shown to exhibit direct deleterious effects on the myocardium or promote arrythmias. Furthermore, statistical evaluations have not demonstrated an increased risk for patients taking PDE-5 inhibitors in comparison with an adequate control population. It becomes clear that endothelial dysfunction is an attractive target for these drugs beyond the treatment of erectile dysfunction. Sildenafil was approved for treatment of primary pulmonary hypertension in the U.S. in June 2005 [98].

The typical side effects of treatment are headache, flushing and dizziness, which occur with all three drugs. Hypotension, orthostatic hypotension and syncope are very rare events, as is priapism. The different characteristics with respect to onset of effect and duration of effect can be used in therapeutic decision making according to the needs and wishes of the man and the couple [99]. PDE-5 inhibitors with a longer duration of responsiveness provide some men with erectile dysfunction and their partners a treatment option, that may offer greater flexibility and potentially less anxiety surrounding the resumption of sexual activity. Shorter acting PDE-5 inhibitors may be preferred by men (couples) with predictable sexual scripts, good communication and concerns with respect to the duration of side effects.

It has become evident that the effectiveness of this therapy is increased if the medication is integrated into a comprehensive diagnostic and therapeutic concept as described above [100,101]. This integrated approach provides medical safety and psychological and couple-oriented efficacy. Reestablishing the quality of erection is then not only a physical and psychological help for the male but may also improve female sexual life quality [102,103].

Premature ejaculation is a frequent single or comorbidity with erectile dysfunction. The use of Selective serotonin reuptake inhibitors (SSRIs) in a behavioral treatment program, as part of the integrated concept, has proven to be effective and again brings a major amelioration to both men and women's sexual life [104].

The use of testosterone in aging men with HSDD and erectile dysfunction in the context of other signs of androgen deficiency becomes more and more an accepted therapeutic strategy [105].

Dehydroepiandrosterone (DHEA) has been used in both gender and has shown variable and controversial results on sexual desire and sexual function [106]. It is to be considered as a prodrug which is converted mainly into testosterone, which then may be transformed into estrogen. The individual variability of these pathways seems to be high and unpredictable. Furthermore, until now there is no licensed drug available and the preparations used are not standardized. Therefore, the use of DHEA is still under investigation and results of future studies will have to be awaited.

Drugs acting on the central nervous system like apomorphine [107] and bremelanotide in both gender, bupropion in women [108] and new preparations like flibanserin are under investigation to see their effectiveness especially in desire and arousal disorders.

Psychosocial and psychotherapeutic interventions

Some well-established psychotherapeutic interventions are to be considered in the individual therapeutic planning for the aging couple, although studies on their effectiveness have mainly been performed in younger patients. The spectrum reaches from individual body and phantasy centered approaches [109,110], such as body awareness and masturbation exercises, sex toys, erotic videos, to couple oriented interventions which combine the classical sensate focus technique proposed by Masters and Johnson [111,112] with different psychotherapeutic approaches (psychodynamic, cognitive-behavioral and systemic). One of the basic elements of the psychotherapeutic interventions is to help the couple create awareness of the blockages and destructive interventions which hinder desired change and to replace these patterns by either more effective repair mechanisms or new patterns of sexual thoughts and behavior (see above).

Conclusion

Sexual health is an important part of the general health also in aging men and women. Sexual health is determined by a complex interaction of biological, psychological and sociocultural factors of the individual partners and their sexual and intimate interaction in the relationship. Empirical evidence shows that the prevalence of sexual disorders, problems and difficulties is quite high with a large variability in the degree of individual distress or relationship difficulties, which is reflected in a large variety of help seeking behaviors in different social and cultural groups.

Helping individuals and couples requires an expertise in sexological classification, biopsychosocial assessment of individual patients and an understanding of the couple's interaction and dynamics. Applying this comprehensive diagnostic concept will help differentiate the sexual symptoms and to delineate their pathogenetic pathways and contributing factors.

Various therapeutic strategies are now available, all of them should be applied in the framework of a comprehensive therapeutic concept. This concept includes basic counseling, information and correction of myths about sexuality in the aging population, discussion of sexual scripts and therapeutic objectives for all patients and individualized combinations of biomedical and psychosocial interventions, which should be tailored to the individual couple's needs, values and clinical conditions.

Biomedical interventions include the systemic use of oestrogen, progestogen and androgens in women with HSDD and arousal disorder taking into account absolute and relative contraindications; tibolone in women with HSDD; PDE-5 inhibi-

tors mainly in men with erectile dysfunction (in same cases of androgen deficiency symptoms in men combined with testosterone) but also in some physical arousal disorders in women; possibly the use of DHEA in both gender; and drugs acting on the central nervous system like apomorphine, bremelanotide, flibanserin, bupropion being under investigation for future use.

Psychosocial interventions reach from individual body awareness and phantasy centered exercises to couple oriented systemic interventions which frequently incorporate the whole concept or various aspects of Master's and Johnson's sensate focus technique.

Future directions

There is a large demand for research in the field of sexuality of the aging population. The lack of comparable empirical data based on a shared methodology is substantial, especially with respect to different groups in society and with respect to couples. Basic science research is needed to better understand the central nervous mechanisms and processes involved in desire and arousal and to increase the knowledge about the peripheral neurovascular and neuromuscular patterns and the neurotransmitters involved.

Evaluation of psychotherapeutic interventions in aging men and women is lacking and will be an important issue in the future. The knowledge of the public about help in the field of sexuality will increase the demand for competent sexological care for the elderly in the future. This means that the assessment of sexual health will most probably become part of the general medical diagnostic workup with consequences for medical education and training. There will be an increasing demand for subspecialty training in sexual medicine not only for urologists and gynecologists, but also for general practitioners, internists and especially specialists in geriatric medicine.

The future will thus force us to build up multidisciplinary teams in which the different specialists collaborate, understand each other by creating a common language, which integrates biomedical and psychosocial ways of thinking and practice.

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