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Sexuality After Ovarian Cancer Therapy

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1. Introduction

Patients who are diagnosed with cancer are mainly concerned about the chance of being cured. Long-term aspects of quality of life seem second rate at this moment due to the fear of death and sickness and the patient's urgent desire to survive. Interests or aims in life, which were important before the diagnosis of a life threatening disease can be completely changed. Doctors tend to concentrate on the necessary therapeutic steps and do not want to overrun the patient with assumed "unimportant" information e.g. the influence of the disease and treatment on sexual function.

Approximately 10% of patients get confronted with ovarian cancer when they are premenopausal (Edmondson et al. 2001). Also for older patients an active sexual life can be important and might be impaired by the disease and therapy (Braehler et al. 1994).

Sexuality can imply different things to different people, the extent to which patients are affected varies significantly, and health care professionals should assess each patient carefully according to her needs (Jefferies et al. 2004, Aerts et al. 2009).

In an evaluation by Stead, although most health care professionals thought that the majority of women with ovarian cancer would experience a sexual problem, only one out of four doctors and one of five nurses discussed sexual topics with their patients. Reasons for not addressing these problems included embarrassment, lack of knowledge of the topic, lack of experience discussing the topic and lack of resources, such as professionals with training in sexual medicine to provide support, if needed (Stead et al. 2003, Hasenburg et al. 2011).

Important elements of quality of life may be affected by ovarian cancer. The impact of the disease on sexuality is determined by multiple factors. Not only can the diagnosis and treatment of ovarian cancer cause sexual problems, but also psychological distress, vulnerable body image and an altered relationship with a partner can diminish overall sexual well-being (Sadovsky et al. 2009).

For example, 62% of patients complain of dyspareunia and 75% of orgasmic dysfunction after therapy for ovarian cancer (Taylor et al. 2004). The significance of radical pelvic and para-aortal lymph node dissection with regard to sexual arousal disorders is not yet well defined. Depending on the patient's individual history and present circumstances in life (married, single etc.) these effects can differ considerably.

A small percentage of patients desire pregnancy. They are especially affected. Only in selected cases a fertility preserving therapy can be offered. Patients with borderline tumors of the ovary have a much better overall survival but often still need a bilateral salpingo-oophorectomy with long-term consequences (GCP Guideline on ovarian cancer 2007, in German).

This chapter will elucidate the impact of ovarian cancer and the necessary therapy on women's quality of life and sexuality and will give helpful recommendations how treating physicians can include this aspect. The aim of this article is to call attention to the subject of sexual function in cancer patients and to provide management strategies. The general and disease-specific changes of sexual function caused by oncologic therapies are outlined.

2. Ovarian cancer (OC) therapy

Apart from the psychological aspects of the diagnosis, there are many physical changes due to OC therapy. OC still being the most aggressive tumor of the female genital tract is a very severe threat to the woman's life and in many cases it cannot be cured. Due to the lack of screening possibilities, OC in most cases is diagnosed at an advanced stage (Jemal et al. 2010). State of the art treatment includes optimal tumor debulking with a following combination therapy of taxol and carboplatinum (GCP Guideline on ovarian cancer 2007, in German). Overall survival with this therapy has been mostly unchanged over the years and is the worst among gynaecological tumors (Jemal et al. 2010). In advanced stages the five year survival does not exceed 40% (Hanker et al. 2010) Therapy is long and strenuous but it is the only chance for cure. After relapse, many patients have to live with ovarian cancer as a chronic disease for many years, but most of the time they are under therapy. Therefore, aspects of quality of life are of major importance.

2.1 Surgical therapy: Influence on sexuality

It is widely accepted that the radicality of the surgical approach increases the chance of the patient to be cured (Bristow et al. 2002). Optimal tumor debulking should be the goal of every surgery. The surgical approach for OC comprises a longitudinal laparotomy from the symphysis to the xyphoid, hysterectomy, bilateral salpingoophorectomy, infragastric omentectomy, pelvic and paraaortal lymphadenectomy and, if necessary bowel resection etc. (GCP Guideline on ovarian cancer 2007, in German). The operation results in a sudden onset of menopause in premenopausal patients, but also has negative side effects on the sexuality of postmenopausal patients. Thus, prior to therapy, it is important to inform the patient about all possible side effects including those on sexual function. Many patients will experience the side effects of their therapy without prior counselling in the course of their disease.

After therapy of ovarian cancer, 75% of patients have difficulties to reach orgasm (Taylor et al. 2004). It has not been clarified whether this results from the severity of the disease, the chemotherapy or from the pelvic and para-aortic lymphadenectomy. The latter could cause damage to the autonomic nerves, comparable to prostate cancer surgery in men (Madeb et al. 2007). A current study from the "AGO-Ovar" (working group on gynecological oncology) is supposed to resolve this question: the LION-PAW study, a substudy of the LION Study (Lymphadenectomy In Ovarian Neoplasm) - (PAW = Pleasure Ability of Women), has the aim to clarify to which extent a radical lymphadenectomy affects the women's sexual function (ClinicalTrials.gov Identifier: NCT00712218).

If the patient seems to be dissatisfied with her sexual life, it has to be evaluated whether she suffers from a hypoactive sexual desire disorder (HSDD, American Psychiatric Association, 1987), which is defined as a deficiency or absence of sexual fantasies and desire for sexual activity. There is little initiative on the patient's side, and sexual intercourse is rare. Stead (2003) and Taylor (2004) reported a prevalence of HSDD between 47% and 67% in clinical

studies of ovarian cancer patients. Interestingly, Raboch et al. (1985) even saw a decrease of libido of 42% and of sexual intercourse of 30% in women after hysterectomy and salpingo-oophorectomy for benign causes. Therefore it seems that sexual problems are mainly influenced by the salpingo-oophorectomy and the following loss of hormone production and are not only due to the diagnosis of cancer.

A large study about sexual activity in patients after ovarian cancer therapy was performed by Taylor et al. (2004) at the MD Anderson Cancer Center. Patients who contacted the center during or after ovarian cancer therapy filled in the Sexual Activity Questionnaire (SAQ). This questionnaire comprises questions about pleasure, arousal, orgasm or sexual activity in general. 50% of the 233 women, who were included, were sexually active at least once a month, especially if they were married ($p < 0.001$) and under 56 years of age ($p < 0.001$) and did not receive cancer specific therapy at this time. Identification with the own body also had a positive impact on sexual activity ($p < 0.004$). 80% of the sexually active women reported vaginal dryness, 40% very strong. 62% complained about pain or discomfort during intercourse. 75% had problems with orgasm, a third of the women almost always. Correlating these results with the physical performance status of the women, lower sexual activity correlated with low performance status and depressive disorders. Regarding vaginal dryness and problems with penetration there was no difference whether the patients were currently under therapy or not. Those patients who were sexually inactive had the following reasons for being inactive: 44% missing partner, 38% lack of interest, 23% physical problems, 10% suffered from the fatigue syndrome (Taylor et al. 2004).

Aerts et al. showed in a retrospective study of fifty women after pelvic surgery for gynaecological cancer that significantly more patients reported sexual problems than controls (83% vs 20%), including decreased desire and impaired vaginal lubrication. Pelvic surgery was specifically related to changed intensity of orgasm, reduced vaginal sensitivity and elasticity, dyspareunia and vaginal narrowing and shortening (Aerts et al 2009, Hasenburg et al. 2011).

2.2 Chemotherapy: Influence on sexuality

Chemotherapy or, in advanced stages, anti-hormonal therapy are a very important part of ovarian cancer therapy. Side effects such as the fatigue syndrome in at least 10% of the women or coexisting depressive disorders are common in 21-25% of the patients and may additionally affect the sexual life of a patient (Taylor et al. 2004, Arden-Close et al. 2008, Reich et al. 2008). Other side effects are nausea and vomiting, weight loss, and also pain (Oskay-Oezcelik et al. 2010). Obviously, in this situation, sexual life becomes less important. But even if the woman does not suffer from a lack of desire, a changed body image due to a long scar on her abdomen or more importantly alopecia may make her feel less attractive. Also with her long-term partner she may be uncomfortable and afraid to present herself.

3. Special patient groups

3.1 The premenopausal patient

Cancer affecting young women prior to completing family planning represents a struggle for the patient and her partner as well as for the caring physician. Cancer treatment does not only impair sexual function and body image, but also the reproductive function with a premature menopause, e.g. the onset of menopause before the age of 40 (Beckmann et al. 2006). Women who are premenopausal at the time of diagnosis are especially affected as the physical changes are more pronounced than in older patients. A sudden onset of

menopause has a much higher occurrence of depression, hot flashes and other postmenopausal symptoms than in the natural course of menopause (Gupta et al. 2006). Patients may experience premature menopause including symptoms such as mood swings, hot flashes, libido loss and insufficient lubrication. Therefore, a hormone replacement therapy should be recommended (Michaelson-Cohen et al 2009).

A fertility conserving approach is possible for selected patients with early stage ovarian cancer and with germ cell tumors of the ovary (Gershenson et al. 2007, Wright et al. 2009). However, young patients are often faced with the fact that fertility cannot be preserved and the wish to have children cannot be fulfilled. Aims in life have to be changed and the whole concept of life has to be reconsidered. In this situation sexuality at first sight is out of focus.

Especially for women, who were either planning to have children or had not given family planning much thought yet, especially if they were single at the time of diagnosis, it is the clinician's responsibility to communicate the cancer-associated issues but also the consequences the therapeutic interventions may have on the patient's fertility. A multidisciplinary approach is necessary and the patient should be advised to visit a fertility centre prior to therapy initiation. Information about different fertility preservation options and contact data of fertility centres can be obtained from the network FertiPROTEKT (www.fertiprotekt.de, in German).

The emotional and physical impact of loss of fertility can be complex and long lasting for women, who are experiencing high levels of distress, menopausal symptoms, and changes in sexual function persisting into survivorship. Alternative family-building strategies like adoption have to be explored before and/or during treatment (Carter et al. 2010). Especially for these patients psycho-oncological counselling should be offered (Hasenburg et al. 2011).

3.2 Borderline tumors of the ovary (BOT)

Patients with borderline tumors of the ovary have a much better prognosis and a higher chance of being cured than patients with ovarian cancer. Therefore, the long-term aspects of therapy are especially important. Most of the patients do not receive chemotherapy, but in most cases both ovaries and the uterus have to be removed (Cadron et al. 2009). For some cases, a fertility preserving operation is possible, but close follow-up is necessary.

3.3 Palliation

Even with the therapeutic progress for ovarian cancer during the last decade, most patients with advanced disease cannot be cured and often live in a palliative situation for months and years. They receive chemotherapy with the possible side effects of fatigue syndrome, sleeping disorders, nausea and vomiting, depression etc. which are additionally aggravated by the consuming disease itself.

The idea of palliation is to maintain quality of life with all aspects as long as possible. Just because a patient has a life threatening disease does not imply that she does not longer wish to live her sexual feelings or to convey expressions of her sexuality (Jefferies et al. 2004).

The importance of sexuality even in a palliative situation was recently described by Vitrano et al. (2011). 65 patients admitted to an acute pain relief or palliative care unit were asked about the role of sexuality in their lives. The patients had a mean Karnofsky index of 58 (range 40-70) and a mean well-being sensation of 5.67 (range 2-10). In summary, 60% of patients did not feel to be less attractive with their disease, 30% of patients felt a little, and only 10% very much less attractive. Most patients (86.4%) considered a dialogue about

sexuality and to face such an issue with skilled people as important. About half of the patients (47%) reported that sexuality was very important for their psychological well-being. Only 7.6% of patients had satisfactory sexual intercourse, 15.2% had little activity, 39.4% had an insufficient activity, and 37.8% did not have any activity. A significant relationship was observed with age ($p= 0.002$), Karnofsky status ($p = .024$), and well-being ($p = .004$). Only 12.1% of patients were sexually satisfied, 12.1% experienced a mild satisfaction, 30.3% had insufficient satisfaction, and 45.5% had no sexual satisfaction. Only 3% of patients had a satisfactory frequency of intercourse, 45.5% had a low or limited frequency, and 51.5% had no sexual intercourse. For 50% of the patients emotional aspects were very important and for 12.1% important. The emotional aspects had a relevant role in sexuality, possibly as a surrogate of impaired physical activity (Vitrano et al. 2011). This survey clearly shows the ongoing importance of maintaining sexual life, even in a palliative situation. Understanding palliation "as making life easier" and more valuable for a person with a non-curable disease, is an important mission.

4. Changes due to therapy (surgery and chemotherapy)

4.1 Impairment of body image

Treatment of ovarian cancer is multimodal, which makes it necessary to differentiate between the side effects of the various therapeutic interventions. Stigmata may be obvious to others like alopecia, scars, a preternatural anus or a urostomy. These can greatly alter the patient's body image and self-esteem. The patient's situation before the disease - whether the integrity of the body has been an important aspect for the woman - may have an impact on the coping process.

Somatic and psychological problems of sexual dysfunction are difficult to differentiate and are inter-dependent. If the patient manages to accept the disease and the associated physical changes, it is easier for her to return to a satisfactory quality of life including sexual function. The mental situation of the patient can be especially impaired, if there had been psychological injuries or traumata in the past, which can be reactivated during her course of the disease, especially if there is a lack of help by the partner, family or friends (Hasenburg 2008).

A partner can often be affected by helplessness and passivity. Due to false considerations, the couple might not talk about these issues, thus, a vicious circle may develop (see Fig. 1). On the other hand, the disease can be used as a chance to intensify the relationship (Rowland et al. 2009).

4.2 Psychological problems

A co-existing depression should be thoroughly assessed. Approximately one out of four cancer patients has any type of depression and at least half of those are willing to accept professional help or referral for this issue (Curry et al. 2002, Passik et al. 1998).

It might be difficult to differentiate between a fatigue syndrome or depressive symptoms. Patients suffering from depression should be offered antidepressive therapy. Some of the antidepressive agents can induce a lack of desire, but a severe depression can also impair sexual functioning. Specific pharmacotherapy may be necessary and the depression should not be treated with hormones alone. Often it is sufficient to take the antidepressive medication for a few weeks and both the mental situation as well as the sexual desire can improve over the course of treatment. If overall well-being increases, sexual life and the relationship may experience benefit (Hasenburg et al. 2008).

4.3 Partnership

There is some information about the effect of a cancer diagnosis or other severe illnesses on relation- and partnerships. Bhatti et al. (2011) reported about the impact of chronic diseases on major life changing decisions like marriage, divorce, childbearing etc. It is suggested that the poor health from a spouse at a young age may cause marriage breakup over time.

For a couple with early stage disease and the option of fertility sparing surgery, the decision to intend to have a child is difficult due to the fear of recurrence (Bhatti et al. 2011).

Glantz et al. (2009) described that the risk of being abandoned by the partner after surviving a severe disease is especially higher for women (20.8%) than for men (2.9%). When counselling a patient with cancer, the partner should not be neglected, who often does not know how to support his wife. This may lead to misunderstandings, and a vicious cycle. As reported by Hasenburg et al. (2011) women with gynaecological cancer often report being fearful of signalling (unintentionally) a desire for sexual intimacy, when they are merely attempting to create emotional proximity in their partner relationship. In order to avoid this miscommunication, women distance themselves from their wish for emotional intimacy, often resulting in an increased sense of loneliness during illness and the period of recovery, and hence reduced quality of life. Most women would also have appreciated their partner being informed about the possible side-effects on sexuality and partner relationship (Corney et al. 1994). Raising the topic of psychological, relational and sexual functioning by health care providers could help to ease the way for a more freely flowing discussion of this topic between health professionals, patients and their partners and could give patients the opportunity to improve their coping strategies and reduce anxiety (Janda et al. 2004).

Vicious circle

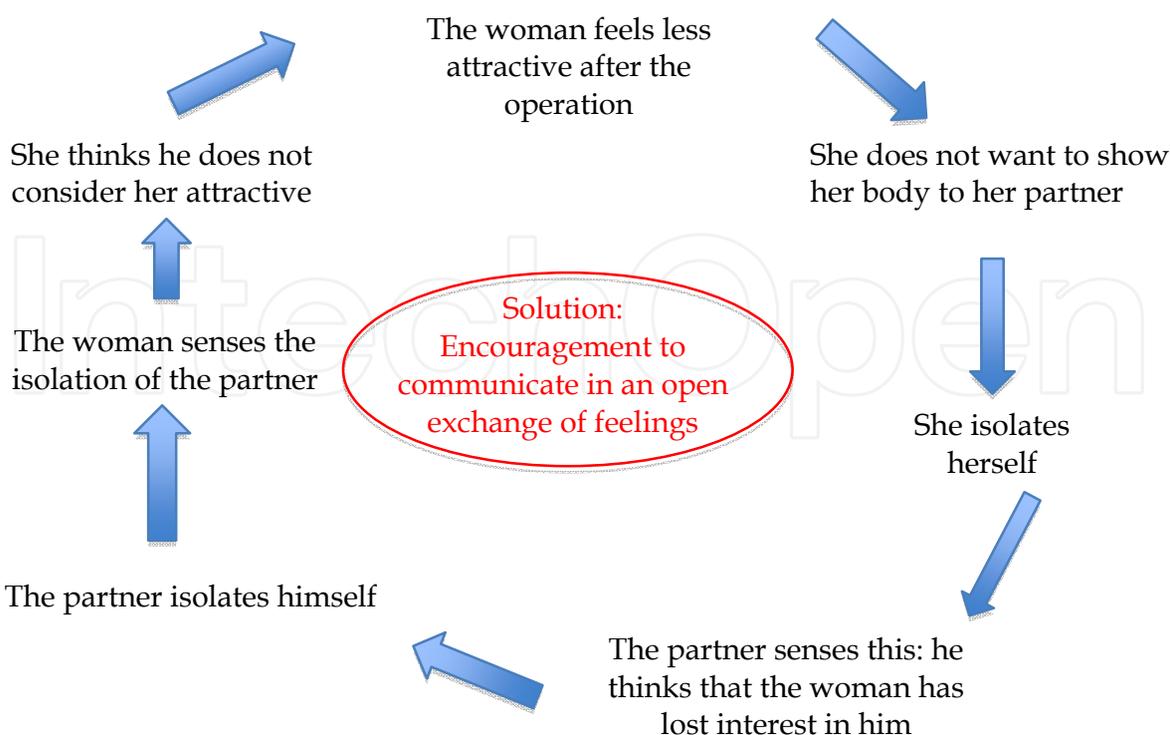


Fig. 1. Vicious cycle.

The aspect of sexual minority women (SMW) like patients with homosexual relationships should not be ignored. There has been some research in this field, and the review of Boehmer et al. (2009) indicated that partnerships of SMW are not directly comparable with heterosexual ones. It seems that SMW may experience less disruption in their sexual relationships like fewer sexual problems such as decreased lubrication, reduced quality and quantity of orgasm, impaired body image, and experience more understanding and supportive partners compared to heterosexual women (Boehmer et al. 2009). However, in SMW there can be problems to obtain information and support from medical professionals with respect to sexual functioning. Sexual functioning may be worse among subgroups of sexual minority women (Boehmer et al. 2009). For example, Mc Gregor found that internalized homophobia was associated with a higher level of distress in lesbians with breast cancer (Mc Gregor et al. 2001).

5. What can the physician do?

Counselling ovarian cancer patients about sexuality, the first step is to evaluate the patient's sexual life before the onset of the disease. Cancer and cancer treatment can exacerbate former sexual function problems and can also create new ones. As sexual dysfunction may be present in healthy individuals, these issues can often be overlooked initially. Awareness of these potential problems will help the patient to adapt to post treatment difficulties such as fatigue syndrome, and body image impairment by the above mentioned reasons. A pretreatment discussion of sexuality and intimacy provides a baseline for comparison with the subsequent re-evaluation during and after treatment (Grzankowski 2011).

People have different opinions about what is normal, so the doctor has to evaluate whether the patient has been satisfied with her sexual life in the past. Questions like "Has anything changed in your sexuality after the diagnosis of your disease?" are very helpful to ascertain if there is any need to go deeper into this topic. Asking "How were your sexual desires recently? How was it on your partner's side?" also help to start talking. For some patients the cancer diagnosis can even be used as an excuse to refrain from being sexually active, they therefore refuse professional help (Hasenburg et al. 2011).

According to the Pfizer Global Study (2002) 80% of cancer patients would like to have more information about the impact of their illness and subsequent therapy on their sexuality. 91% of the cancer patients were afraid to ask their treating physician about sexual problems, and even 97% of the doctors did not inform their patients about possible sexual dysfunction. These findings emphasize that there is a great need for intensive training in communication skills. Physicians have to learn how to actively approach this distressing issue. Furthermore they have to be aware that the way of addressing sexual problems and counselling might be influenced by their own sexual experience (Hasenburg et al. 2008). When talking about sexuality issues, the doctor should try to find the patients language and wording, so that it is easier for her to talk about these problems. Medical technical terms should be avoided, if possible.

For women, sexuality might stand for intimacy and tenderness, instead for sexual intercourse only. The treating physician has to identify the special problem for each woman and can help her to cope with losing sexual and erotic potency (Hasenburg et al. 2008).

It is of major importance to sensitize physicians working with ovarian cancer patients to the issues of quality of life and sexuality. Each patient has to be informed about the long-term consequences of the disease and the scheduled therapy. Although sexuality is a taboo subject, the potential long-term consequences of oncological therapy on sexual function, possibly on fertility and quality of life have to be considered and discussed with the patient. Patients need to understand that problems in sexual function do not imply a general failure of the person.

The doctor has a role-model function and should address these issues frankly, making it clear to the patient that sexuality is an important aspect of quality of life. A special training in sexual medicine may be helpful but it is not mandatory.

5.1 Hormone Replacement Therapy (HRT)

The role of hormone replacement therapy is often controversially discussed (Jefferies et al. 2004, Mørch et al. 2009). After ovarian cancer therapy, premenopausal patients are likely to suffer from premature onset of menopause, while postmenopausal patients may suffer from libido loss. Sudden onset of menopause can cause more severe symptoms such as postoperative depressive episodes, hot flashes, mood changes and long-term consequences such as osteoporosis or sexual dysfunction due to sudden hormone deprivation than the gradually beginning menopause. This implies that in these patients a hormone replacement therapy should be considered and discussed even prior to surgery.

In older patients a reduction of desire can be due to the lack of androgens after bilateral salpingo-oophorectomy. The stromal cells and the hilar interstitial cells in the ovaries are essential for the synthesis of androgens (testosterone and androstendione) which, among other factors, preserve a woman's libido after menopause (Fogle et al. 2007). Thus, the side effects of cancer treatment on the gonads can hurt all age groups. Androgens can be replaced by transdermal testosterone substitution (Buster et al. 2005, Davis et al. 2008). In the study of Shifren et al. (2009) a significant rise in sexual interest and activity could be shown after androgen replacement for women after hysterectomy and bilateral salpingo-oophorectomy for benign disease. However, oncological safety is yet unclear and androgen replacement can not be recommended up to now.

Estrogen substitution is important to ameliorate hot flashes, osteoporosis, vaginal dryness and other postmenopausal symptoms. The largest study on this topic from Sweden on 649 patients with OC and 150 with borderline tumors of the ovary, aged between 50 and 74 years showed that neither pre- nor postoperative HRT affected overall survival, nor the kind of HRT administered (multivariate hazard ratio = 0.57; 95%-CI: 0.42-0.78), (Mascarenhas et al. 2006). In a second study of postmenopausal patients with ovarian cancer, HRT treatment was also not associated with an increased risk of recurrence (Michaelson-Cohen et al. 2009).

As an alternative to orally administered HRT, estradiol can be substituted with oestrogen patches or a vaginal ring (Estring®). The systemic effects with the latter are reduced while local oestrogen effects are sufficient (Henriksson et al. 1996). Serum levels are higher with oestrogen patches than with the vaginal ring (Gupta et al. 2008). In ovarian cancer, there is no contraindication for local oestrogen therapy (GCP Guideline on ovarian cancer 2007, in German).

If the quality of life is reduced due to oestrogen deprivation secondary to ovarian cancer, hormone therapy with sex steroids can be initiated after a careful risk-benefit assessment

(Michaelson-Cohen et al. 2009). In patients with an endometrioid histology, low-dose-oestrogens should be combined with a progesterone therapy (GCP Guideline on ovarian cancer 2007, in German).

5.2 Alternatives for HRT

For patients suffering from postmenopausal symptoms with a contraindication against HRT or who refuse HRT, there are alternative therapeutic options. The main symptoms need to be identified, so these can specifically be addressed.

There is a great choice of herbal and homeopathic medicines with a significant placebo effect leading to a reduction of postmenopausal symptoms in up to 20% of the patients (Tempfer et al. 2007). However, alternative drugs should not be taken without medical advice. The risks and side effects of these medications have not been completely investigated. Food supplements containing isoflavone in soy or red clover could slightly improve hot flashes (GCP guideline on hormone replacement therapy by the German Society of Gynecology & Obstetrics, in German; Wuttke et al. 2008, Haimov-Kochmann et al. 2008).

In order to prevent osteoporosis in premenopausal patients with a sudden onset of menopause vitamin D (1000 IE/d), a daily supplement of calcium (1500mg/d), physical exercise and abstinence from nicotine are recommended (GCP guideline on osteoporosis 2009, in German). In patients with preexisting osteoporosis bisphosphonates should be administered (Reid 2009).

5.3 Pharmaceutical alternatives

If hot flashes and sleep disorders persist, antidepressants can be an option (selective serotonin reuptake inhibitors, SSRI) (Bordeleau et al. 2010). With e.g. 75 mg venlafaxine daily a reduction of hot flashes of approximately 60% was observed compared to 20% with placebo (Pachman et al. 2010). Another possibility are anticonvulsive (e.g. gabapentin) or antihypertensive agents (clonidin, methyldopa) (Hall et al. 2011).

A survey of the medications showed the following reductions of hot flashes (Sideras et al. 2010):

- Venlafaxine: 33% reduction of symptoms; 37.5 bis 75mg/d
- Paroxetine: 41% reduction of symptoms; 20mg/d
- Fluoxetine: 13% reduction of symptoms; 20mg/d
- Sertraline: 3 to 18% reduction of symptoms, 50mg/d
- Gabapentin: 45 to 50% reduction of symptoms, 900mg/d

5.4 Vaginal dilators

Patients who have undergone surgical shortening of the vagina, radiation therapy of the pelvis or brachy-therapy should be informed about the available treatment options for vaginal strictures or adhesions to preserve the patient's ability for cohabitation. These include the use of vaginal dilators or bepanthen tampons which can be combined with oestrogen-containing lotions or lubricants. Treatment can be initiated four to six weeks after therapy (GCP Guideline on diagnosis and therapy of cervical cancer 2008, in German). It is important to use the vaginal dilators regularly (e.g. Dilator Set®), even if the patient is not in

a relationship, because dilatation becomes increasingly difficult with time. Accompanying pelvic floor muscle training can be recommended and results in gain over muscle identification, control and strength (Derzko et al. 2007). Possible fears of the patient such as manipulating her own genitals or resuming of sexual intercourse should be actively discussed.

6. Conclusion

The potential impact of ovarian cancer therapy such as surgery, chemotherapy or even radiation therapy on sexual function and fertility needs to be discussed with each patient. Even for women in a palliative setting, sexuality and intimacy should be an issue.

Impaired sexual function after treatment of ovarian cancer is a common problem and represents a significant limitation of quality of life. While for younger patients infertility and early postmenopausal symptoms may be of major concern, postmenopausal women might consider the loss of the remaining androgen function of the ovaries as most striking. The significance of radical pelvic and para-aortic lymphadenectomy for sexual function remains unclear.

Local or systemic oestrogen therapy subsequent to treatment of ovarian cancer is considered an adequate treatment of postmenopausal symptoms. Apart from symptomatic therapy, physical interventions (e.g. physiotherapy) and physical activity should be included as supportive actions. For patients with an underlying depressive condition an antidepressive medication should be taken into account, even if only for a limited time.

Health care providers have a model function when discussing therapy-induced changes of sexual function and should regard sexuality as an essential element of quality of life. Therefore, the possible treatment side effects, including therapeutic or preventive options, and the quality of life after cancer must be discussed with the patient prior to therapy initiation. By understanding that sexuality is an important and normal aspect of life and not a “luxury issue” even for patients with a non-curable disease, treating physicians can support their patients and help them to maintain a good or at least acceptable quality of life.

7. GCP guidelines

1. Interdisciplinary guideline of the German Cancer society and the German Society of Gynecology and Obstetrics on diagnosis and therapy of malignant ovarian tumors. In German, 2007. www.awmf.org/leitlinien/detail/ll/032-035.html
2. Interdisciplinary guideline of the German Cancer society and the German Society of Gynecology and Obstetrics on diagnosis and therapy of cervical cancer. In German, 2008. www.awmf.org/leitlinien/detail/ll/032-033.html
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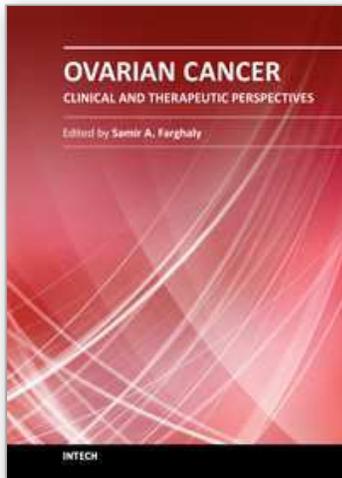
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Worldwide, Ovarian carcinoma continues to be responsible for more deaths than all other gynecologic malignancies combined. International leaders in the field address the critical biologic and basic science issues relevant to the disease. The book details the molecular biological aspects of ovarian cancer. It provides molecular biology techniques of understanding this cancer. The techniques are designed to determine tumor genetics, expression, and protein function, and to elucidate the genetic mechanisms by which gene and immunotherapies may be perfected. It provides an analysis of current research into aspects of malignant transformation, growth control, and metastasis. A comprehensive spectrum of topics is covered providing up to date information on scientific discoveries and management considerations.

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