

Sexuality after breast cancer

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Abstract

Breast cancer (BC) may affect three main domains of women's sexuality: sexual identity, sexual function and sexual relationship. Age, lymphedema, side-effects of surgery, radio-, chemo- and hormonotherapy, pregnancy-related problems, infertility, iatrogenic premature menopause, with its cohort of symptoms secondary to the chronic loss of oestrogens on the brain, on the sensory organs, on the pathophysiology of sexual response and on the function of the pelvic floor, may all affect sexuality after breast cancer. Women carriers of BRCA mutations, who might consider bilateral prophylactic mastectomy, may have a specific iatrogenic impact of surgery on their self-image and femininity. Unfortunately, biological factors, secondary to the diagnosis and treatment of breast cancer, are usually understudied with respect to the psychosocial ones. Physicians should improve their skill in understanding and listening to sexual concerns and in addressing the basic biological issues that BC raises for female sexual identity. Physicians should also at least diagnose and recommend clinical help for the most common sexual symptoms in BC survivors: loss of libido, arousal disorders, dyspareunia, anorgasmia and loss of satisfaction. The best results will be obtained in sharing a "twin competence" with a good psychosexologist or a psychiatrist with an interest in this field, to whom patients with clear psychodynamic or relational problems should be referred for specific help, after having excluded or cured the potential biological roots of them. Attention to the anatomy and function of the pelvic floor should become a mandatory part of a thorough clinical gynaecological and sexological examination, to give BC survivors the right to a full diagnosis and competent help. This paper will focus on the biological factors that are of main interest for the daily practice of health care providers.

Introduction

Female sexual identity, sexual function and sexual relationship may be dramatically wounded, physically and emotionally, by the many changes and challenges the woman has to face after breast cancer (BC) diagnosis and treatment. This paper will focus on the most important biological factors that may impair sexual outcome after BC diagnosis and treatment.

Female sexual identity

Femininity

Femininity may suffer a major insult, for a number of biological reasons. The breast is a prominent personal and social sign of femininity; breast surgery may greatly affect body image (Dorval et al., 1998; Ganz et al., 2002; Graziottin, 2006; Schover et al., 1995). Short-term impact depends on the type of surgery performed (and their cosmetic result) and the need for radiotherapy or chemotherapy, and hormonotherapy. However, more conservative treatments do not appear to significantly modify quality of life (QOL) or women's sexuality in the long term (Dorval et al., 1998; Ganz et al., 2002; Graziottin, 2006;

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Schover et al., 1995). Arm lymphedema may be the major side effect of BC treatment. It may develop up to 20 years after breast and lymph node surgery but it is uncommon among women who underwent the simpler lymph node sentinel biopsy (Nardone et al., 2005). The type of surgery and radiotherapy are relevant in determining an increased risk of lymphedema (Nardone et al., 2005). Iatrogenic menopause is particularly problematic for younger patients: 25% of BC patients are premenopausal, and 15% are diagnosed before the age of 45 (Graziottin, 1998; Graziottin and Castoldi, 2000; Graziottin, 2003; Schover et al., 1995). More so as oestrogen modulate the quality of brain aging with its cohort of cognitive and emotional symptoms (Henderson, 2000) and the quality of aging of sensory organs that are sexual targets and sexual modulators of sexual desire and central arousal (Graziottin, 1996). The importance of the age at diagnosis is not limited to the potential impact of the menopause, but to the different individual and social tasks and goals of women's reproductive years. Women younger than 50 complain of more menopausal symptoms which continue to persist several years after the diagnosis of BC (Avis et al., 2005; Ganz et al., 2003; Graziottin, 1996). Moreover, a recently published evaluation of QOL in long-term disease-free BC survivors shows a statistically negative association of past chemotherapy and/or tamoxifen hormone therapy with current QOL (Ganz et al., 2002).

Maternity

It may become the core of a major identity crisis for women who are diagnosed with BC during their fertile age. Since most BC recurrences appear within 2-3 years after initial diagnosis, patients should be advised to postpone pregnancy for 3 years, in case of small tumours (< 2 cm) with no lymph node involvement. In case of axillary node involvement pregnancy should be postponed for 5 years (Helewa et al., 2002). The risk of congenital abnormalities following chemotherapy does not seem to exceed normal incidence (Kasum, 2006), but effects of the antiestrogen tamoxifen or of the aromatase inhibitors on human pregnancies have not been reported so far to the authors' knowledge. Pregnancy does not seem to increase the risk of recurrence of BC, according to the most recent studies. However, breast cancer survivors should be referred for a full oncological evaluation, prior to attempting pregnancy (Blakely et al., 2004; Helewa et al., 2002).

Eroticism

BC may affect sensuality, sexiness and receptiveness through a decrement in pleasure with breast caresses, that is reported by 44% of women with partial mastectomy and 83% of those with breast reconstruction (Schover et al., 1995). In addition, the loss of pleasurable sensations in the breast after surgery may reduce sexual arousal, through both a central and peripheral mechanisms. The arousal impairment is likely to be associated with a complex sense of loss: physical, for the lack of feedbacks from the breast when caressed or kissed; and psychosexual, for the body image wound that breast surgery variably involves (Graziottin, 2006) and the impairment of the peripheral non-genital arousal (Levin, 2002), which is a key contributor of women's sensuality and arousability. The iatrogenic menopause caused by chemotherapy may dramatically devastate the woman's sense of eroticism for its consequences on sexual function (loss of sexual desire, vaginal dryness and dyspareunia), and the impairment of quality of life that menopausal symptoms may cause. Of note, BC currently contraindicates systemic hormonal therapy: therefore many menopausal symptoms remain unaddressed in BC survivors (Graziottin, 1998; Graziottin and Castoldi, 2000; Graziottin, 2003). However, even if the ability to reach orgasm through intercourse tends to be reduced, the ability to reach orgasm through non coital caressing does not differ from that of other women (Schover et al., 1995). Reactive depression and anxiety are quite common among BC patients, especially during the

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first year subsequent to BC diagnosis. After this critical “recovery” period, the majority of women do improve individually in terms of psychological symptoms. However, once sexual difficulties have developed, they tend to be self-maintaining because couples have learned to avoid the anxiety surrounding sexual interactions by avoiding any intimacy (Baucom et al., 2005). In particular, depression is significantly related to sexual desire (Speer et al., 2005). Neurobiologically, the loss of sexual hormones after the menopause reduces their effect on the dopaminergic seeking-appetitive-lust system, which affects the instinctual component of sexual desire. Psychologically, the depressed mood associated with reduced vital energy and reduced interactions with the partner affects also the responsive component of the motivational side of sexual desire.

Social role

Social role may represent an area relatively safe from BC, particularly in well educated women, especially in the peri/postmenopausal years (Carlsson and Hamrin, 1994; Ganz et al., 2002). A recent study showed that neuropsychological impairment is not directly associated with self-perceived cognitive deficits or fatigue. However, 46% of patients reported self-perceived cognitive deficits and 82% of the patients complained about cancer related fatigue. These complaints were more frequent among women who received standard-dose chemotherapy (Mehnert et al., 2007).

Bilateral or contralateral prophylactic mastectomy

A recent Cochrane review focused specifically on outcomes of more than 4,000 women undergoing Bilateral Prophylactic Mastectomy (BPM) or Contralateral Prophylactic Mastectomy (CPM) after BC diagnosis (Lostumbo et al., 2004). Focusing on psychosocial outcomes, women generally reported satisfaction with their decisions to have BPM/CPM but reported less consistent satisfaction for cosmetic outcomes, often due to surgical complications, such as unanticipated re-operations (Frost et al., 2005; Lostumbo et al., 2004). With regard to emotional well-being, most women showed an improvement in cancer worry and psychological morbidity postoperatively. Body image and feelings of femininity were the most adversely affected (about 20% of the patients after BPM had adverse effects on those domains) (Lostumbo et al., 2004), even when a long follow-up period is considered (Frost et al., 2005; Geiger et al., 2006).

Female sexual function

Sexual desire

Sexual desire has three major dimensions: biological, motivational-affective and cognitive. Biological roots of sexual desire depend first on sexual hormones, which seem to control the intensity of libido and sexual behaviour, rather than its direction (Pfaus and Everitt, 1995). Loss of oestrogens, secondary to iatrogenic or naturally occurring menopause, may contribute to inhibit the sexual drive and the physical receptiveness; loss of androgens (Sands and Studd, 1995), secondary to chemotherapy or ovariectomy, may further worsen the picture. Sensory organs involution after menopause may further reduce the biological basis of libido. Motivational-affective and cognitive aspects of sexual desire may be impaired by the negative impact that breast surgery has on self-image, and the perception itself of being an object of sexual drive (Graziottin, 2006). The shift of the couple relationship towards more affective dynamics may increase the emotional intimacy but reduce the physical sexual drive.

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Sexual arousal

The risk for arousal disorders is 5 times greater among BC survivors than among non-cancer women with female sexual dysfunction (Broeckel et al., 2002; Speer et al., 2005). Arousal difficulties may be secondary to biological central difficulties caused by the loss of sexual hormones, secondary to iatrogenic or spontaneous menopause, which may be worsened by depression, anxiety, chronic stress and insomnia. Problems in non-genital peripheral arousal may be better exemplified by "touch-impaired" disorders (Graziottin and Castoldi, 2000). Nipple erection may be reduced both by decreased breast sensitivity, secondary to surgery, and inhibition, for the shame some women feel in exposing the operated breast. Impairment in genital arousal could be mainly caused by oestrogen loss, vaginal dryness and dyspareunia (Graziottin and Castoldi, 2000). These conditions may cause a defensive spasm of pubococcygeus muscle. The attention to hyperactive, defensive conditions of the pelvic floor secondary to dyspareunia is mandatory in BC patients. They should as well be taught how to relax the levator ani muscle and encouraged to do a self-massage with a medicated oil. Self-massage and stretching of the levator ani may rapidly reduce dyspareunia and arousal disorders secondary to hypoestrogenism that may not be treated with oestrogens because of BC. However, many physicians do currently consider appropriate to reduce the vaginal symptoms with local, topical treatment with low doses of estradiol, a bioidentical hormone. Vascular problems have recently been claimed as critical factors in female arousal disorders (Goldstein and Berman, 1998; Traish and Kim, 2006). The anamnestic data to be screened should therefore include: smoking, hypercholesteremia, diabetic vasculopathy and severe atherosclerosis. BC patients, with persistent good libido, and vascular arousal disorders might have a significant clinical improvement with vasoactive drugs such as sildenafil, vardenafil or tadalafil that would not be contraindicated in BC patients. However, controlled studies are lacking.

Orgasm

Difficulty in reaching orgasm is higher in BCS patients (Broeckel et al., 2002, Speer et al., 2005), with a significant worsening in sexual functioning over 3 years of follow-up and after chemotherapy (Schover et al., 1995). However, orgasm reached through non coital caressing did not differ from control women, probably because of the inhibitory effect of dyspareunia on vaginal orgasm (Schover et al., 1995), together with the effect of different dominant neurochemical pathways (nitric oxide) androgen dependent, essential for the clitoral response and vasoactive intestinal peptide, oestrogen dependent, more critical for the vaginal response (Traish and Kim, 2006).

Satisfaction

Recently, Speer et al. (2005) showed a reduced satisfaction (both physical and emotional) among BC survivors versus controls and versus non-cancer women with female sexual dysfunction using the Female Sexual Functioning Index. Moreover, pain and an overall disappointing sexual experience might also be responsible for the significantly reduced satisfaction reported by BC survivors (Speer et al., 2005).

Antiestrogens and aromatase inhibitors

During tamoxifen therapy, the most frequent sexual complaints by postmenopausal BC survivors are vaginal dryness and/or dyspareunia, decreased sexual desire (Morales et al., 2004), and difficulties achieving orgasm than women who are not

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taking this drug (Day et al., 1999; Merits et al., 2002). Treatments with aromatase inhibitors are related to an augmented risk for dyspareunia (Morales et al., 2004; Davis et al., 2006).

Sexual relationship

A good quality of emotional intimacy may explain why BC patients found it easier to discuss their sexual problems with their partner during their illness than with doctors and psychologists. When BC is diagnosed the demands of illness are superimposed on the normal demands of family life and this may have a different impact on the family relationships depending on the phase of the family life cycle when the cancer is diagnosed: young women and couples seems to be particularly vulnerable (Northouse, 1994). Focusing on the physical aspect of the problem, breast surgery may affect physical attractiveness and reduce easiness with breast foreplay, although this is difficult to be openly admitted as it seems rough, insensitive and/or unfeeling (Graziottin, 2006). Moreover, a difficult penetration due to hypoestrogenic vaginal dryness may also precipitate an erectile deficit, when the partner perceives vaginal dryness as a sign of refusal or somehow an indication of the "insensitivity" of his sexual request and approach (Graziottin and Castoldi, 2000). It's crucial to give a more balanced help also to partners of BC survivors.

Male breast cancer

The incidence of male breast cancer is rising; however, mortality due to male breast cancer has not changed, unlike female BC (Nahleh and Girnius, 2006). The treatment of male breast cancer has been extrapolated from the knowledge of female BC, despite the multiple differences in the pathogenesis, biology and genetics of these two disease entities, especially the differences with regard to the gender role of sexual hormones. However, the impact of male BC on sexuality of men affected with this disease has not been systematically studied to the Author's knowledge.

Conclusion

BC may affect female sexual function, sexual response and couple relationship in a complex way, involving both psychosocial and biological factors, so closely interacting that it is difficult to assert the relative weight of hormonal and overall physical changes on psychosexual variations in BC survivors. Physicians, and particularly the oncologists in this specific field, should improve their skill in understanding and listening to sexual concerns and in addressing the basic biological issues that BC raises for female sex identity. They should also at least diagnose and recommend clinical help for the most common sexual symptoms in BC survivors: loss of libido, arousal disorders, dyspareunia, anorgasmia and loss of satisfaction. Best results will be obtained in sharing a "twin competence" with a good psychosexologist or a psychiatrist with an interest in this field, to whom patients with clear psychodynamic or relational problems should be referred for specific help, after having excluded or cured the potential biological roots of them. Attention to the anatomy and function of the pelvic floor should become a mandatory part of a thorough clinical gynaecological and sexological examination, to give BC survivors the right to a full diagnosis and competent help. Further studies are needed to assess both the impact of hormone therapy on women's sexuality after BC: the only excellent study published is focused on healthy postmenopausal women, oestrogen repleted, treated with aromatase inhibitors after testosterone supplementation. More studies are needed as well to assess the impact of BC in men and, last but not least, the effect of different treatment intervention for sexual disorders after BC. Finally, the

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overall adjustment and QOL of BC survivors are positive in 70-80% of cases except for sexual function and satisfaction. An understanding and competent physician could help the woman and the couple to cope better with the tremendous strain of BC, also from the sexual point of view: without giving up the sexual intimacy, that is such a critical part of QOL, particularly in younger women and couples.

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