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A controlled study of sexual activity and functioning in epithelial ovarian cancer survivors. A therapeutic approach

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Abstract

Objectives. To explore sexual activity and functioning in epithelial ovarian cancer survivors (EOCSs) compared to age-adjusted controls from the general population (NORM) with focus on findings that should be given therapeutic considerations.

Methods. A cross-sectional study of 189/287 (66%) EOCSs treated at The Norwegian Radiumhospital 1979–2003 using a mailed questionnaire including demographic and somatic issues, and schedules concerning sexuality, fatigue, mental distress and quality of life. Blood tests for sex hormone determination were taken at their GPs.

Results. Among EOCSs 47% (95% CI 40–54%) were sexually active compared to 53% (95% CI 48–58%) in NORM. The sexually active EOCSs reported lower levels sexual pleasure ($p<0.001$) and higher levels of sexual discomfort than NORM ($p<0.001$). In sexually active EOCSs an association between higher level of sexual discomfort and both lower serum levels of estradiol ($p=0.02$) and higher levels of SHBG ($p=0.04$) was observed. Sexually active EOCSs were significantly more often in a paired relation and showed lower levels of fatigue and better quality of life compared to inactive EOCSs. Lack of interest (36%) and physical problems (23%) were significantly more common in sexually inactive EOCSs compared to NORM. In multivariable analyses of sexually active EOCSs premenopausal oophorectomy, having had chemotherapy, age at survey, mental health and body image were significantly associated with sexual functioning.

Conclusions. Our findings on sexual inactivity and poorer sexual functioning among EOCSs point to issues in need of consideration. We present therapeutic strategies for evaluation and treatment for sexual problems in EOCSs.

Keywords: Sexual functioning; Body image; Quality of life; Sex hormones; Therapeutic interventions

Introduction

Due to multimodal treatment the number of epithelial ovarian cancer survivors (EOCSs) has increased during the last decades, but only a minority of them are permanently tumor-free. The majority experience relapses with repeated courses of chemotherapy over years [1]. Recent studies of sexuality in EOCSs [2,3] hardly discriminate between sexual activity and sexual functioning in EOCSs. Sexual activity concerns frequency, while functioning includes the patients' experience of sex and partner intimacy. The need for well-defined samples of EOCSs and controls, and identification of areas for therapeutic interventions has also been emphasized [2–5].

In a sample of 200 EOCSs without active disease for at least 2 years, Stewart et al. [2] reported that at a mean of 7.2 years after diagnosis 57% of EOCSs had their sexual life affected in a negative way. The quality of sexual functioning was significantly associated with age, marital status, diagnosis prior or after natural menopause, mental health, and treatment modalities.

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Carmack Taylor et al. [3] examined 232 EOCSs at a mean of 4.3 years after primary treatment, among whom 47% received chemotherapy at the time of the survey. Half of these patients were engaged in sexual activity. The sexually active EOCSs were significantly more frequently married, were younger, did not receive current chemotherapy, and had longer follow-up time than those sexually inactive. That study used the Sexual Activity Questionnaire [6] which has been used in several studies of female cancer survivors compared with controls from the general population [3,7].

In the present cross-sectional study of EOCSs and age-matched women from the general population (NORM) we wanted to address the following issues in order to identify areas for therapeutic intervention: (1) characteristics of sexually active and inactive EOCSs; (2) associations between sexual functioning and serum levels of sex hormones in EOCSs; (3) sexual activity and functioning of EOCSs compared to NORM, and (4) variables associated with sexual functioning in multivariable analyses in EOCSs and NORM and in EOCSs only based on findings from former studies and new findings introduced in this study.

Patients and methods

Patient selection

The participants were 20–70 years at survey with >18-month survival since diagnosis. They had been treated according to protocols for FIGO stage I–III epithelial ovarian cancer (EOC) at The Norwegian Radiumhospital [8]. In order to get a sufficient sample size for minimum statistical power, we had to include patients diagnosed and treated from 1979 and onwards. The selection criteria were fulfilled by 287 EOCSs who were alive by September 2004 after excluding 10 cases who at revision of histology turned out to have non-epithelial EOC. A questionnaire was mailed to these patients, and they were told to have blood pressure and blood samples taken at their regular general practitioner. One reminder was sent to the non-respondents after 4 weeks.

Treatment principles

All patients had primary surgery with bilateral oophorectomy, and most patients also had hysterectomy, omentectomy and maximum tumor debulking. Primary treatment was according to established protocols, either surgery only, or surgery combined with subsequent chemotherapy depending on FIGO stage, histology and ploidy [8]. Platinum-based chemotherapy represented the most frequent systemic treatment. Paclitaxel was incorporated into the combination chemotherapy in the 1990s. The majority of EOCSs received combined carboplatin and taxol as firstline treatment, and nine patients got cisplatin monotherapy. Relapses were treated with various types of chemotherapy administered as combinations or monotherapy with paclitaxel, carboplatin, gemcitabine and tamoxifen. First relapse was defined as “relapse within 6 months” after diagnosis. The “on-treatment” group consisted of EOCSs who received chemotherapy during the last 6 months preceding the survey. Four EOCSs had local radiotherapy to metastatic sites.

Measures

Education was categorized into two levels of school years completed (≤12 or >12 years). *Paired relation* characterized women who were married or cohabiting. Having *paid work* was defined as having income from employment or independent business. All co-morbid diseases were self-reported. *Musculo-skeletal diseases* covered osteoporosis, fibromyalgia, arthrosis, or other musculo-skeletal diseases during the preceding year, diagnosed by a doctor. *Somatic complaints* included “considerable distress” during the preceding year caused by nausea, dyspepsia, diarrhea, constipation, tachycardia, dyspnoea, or bloating. Hormone replacement therapy (HRT) was reported as current use of gender hormones, while other medication was reported as regular use last year. *Daily smoking* concerned current consumption of any number of cigarettes. *Level of physical activity* was defined according to Thorsen et al. [9] and defined as minimal, or moderate or more.

Schedules

The *Sexual Activity Questionnaire (SAQ)* consists of three sections covering (1) relational status, (2) reasons for sexual inactivity, and (3) sexual functioning (SAQ-F) [6]. The SAQ-F has a time frame of last month and consists of 10 items with three subscales: pleasure, discomfort and habit. Items 1–7 of the SAQ-F are rated on a four-point Likert scale from ‘not at all’ (0) to ‘very much’ (3). The SAQ—Discomfort items concern ‘dryness of the vagina’ and ‘pain and discomfort at penetration’. The SAQ—Pleasure items comprise the following items: ‘sex is important’, ‘do enjoy sexual activity’, ‘do desire to have sex’, ‘feel satisfied with sex’ and ‘satisfied or not with frequency of sexual activity’. A higher score on SAQ pleasure and discomfort means respectively more pleasure and more discomfort. Normative data of the SAQ based on Norwegian women have been presented by Vistad et al. [7], and we used that database for NORM data. In our sample the internal consistency for SAQ—Pleasure was $\alpha=0.93$ and $\alpha=0.81$ for SAQ—Discomfort, and among NORM corresponding values were $\alpha=0.93$ and $\alpha=0.81$.

The *Body Image Scale (BIS)* is a 10-item self-rating scale developed to show changes in the body image of cancer patients [10]. The BIS focuses on the patient’s feelings about her appearance and changes due to her cancer and/or treatment during the past week. Each item is scored on a four-point Likert scale scored: from ‘not at all’ (0) to ‘very much very’ (3), and a higher BIS score represents poorer body image. The internal consistency was $\alpha=0.87$ for BIS in our sample. In NORM only the five BIS items (BIS-5) unrelated to cancer treatment were scored. The internal consistency was $\alpha=0.87$ for EOCSs and for NORM $\alpha=0.80$.

The *Intimate Bond Measure (IBM)* is a 24-item self-rating scale measuring care and control from partner in the patient’s current relationship [11]. Care concerns the partner’s support and positive interest in the patient, while control concerns the partner’s mental and physical control exerted over the patient’s life. Both issues are assessed with 12 statements that are scored on a four-point Likert scale scored: from (0) ‘not at all’ (0) to (3) ‘very true’. Higher values mean more care or control. In our sample the internal consistency for care was $\alpha=0.96$ and for control $\alpha=0.92$.

The *Hospital Anxiety and Depression Scale (HADS)* consists of 14 items, 7 items on both the depression and the anxiety subscale [12]. Higher scores refer to higher levels of anxiety or depression. Internal consistency for the anxiety subscale was $\alpha=0.89$, and for depression $\alpha=0.85$ in our sample.

The *Fatigue Questionnaire (FQ)* consists of 13 items, 11 of them assessing the presence and intensity of fatigue symptoms [13]. Seven items assess physical fatigue and four assess mental fatigue, and summed up they represent the total fatigue score. Higher scores mean more fatigue. Cases of chronic fatigue (CF) are identified by item 12 according to predefined criteria [14]. Internal consistency in EOCS was for physical fatigue $\alpha=0.92$, mental fatigue $\alpha=0.90$, and total fatigue $\alpha=0.92$.

The *European Organization and Treatment of Cancer QLQ-C30 (EORTC QLQ-C30)* is a well-established QOL measure with function and symptom scales [15,16]. We only used the function scales in which higher scores mean better function. In the EOCSs sample the internal consistencies were physical $\alpha=0.76$, role $\alpha=0.87$, emotional $\alpha=0.88$, cognitive $\alpha=0.71$, social $\alpha=0.88$ and overall QoL/global health $\alpha=0.89$. Due to high inter-correlations among these functions, only QoL/global health was entered into the regression analyses.

Measurements of sex hormones

All serum blood samples were analyzed at the Hormone Department, Aker University Hospital. Estradiol was measured by DELFIA kit from Wallac, Turku, Finland, competitive fluorimmunoassay with total analytical variation <10%. The reference range for estradiol in postmenopausal women was <0.10 nmol/l. Testosterone was measured by kit from Orion Diagnostica, Espoo, Finland, competitive radioimmunoassay assay with total analytical variation