Clinical Oncology 27 (2015) 647–655

Contents lists available at ScienceDirect

Clinical Oncology

journal homepage: www.clinicaloncologyonline.net

Overview

Sexual Difficulties after Pelvic Radiotherapy: Improving Clinical Management

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Received 1 June 2015; received in revised form 16 June 2015; accepted 18 June 2015

Abstract

Modern multimodality cancer treatment has led to more than 2 million people living with and beyond cancer in the UK, an impressive survival statistic on which clinicians and services continue to build. However, what is less readily acknowledged by health professionals and patients alike are the 500 000 people whose daily lives are adversely affected by the longer term consequences of cancer treatment. Macmillan Cancer Support estimate as many as 350 000 people in the UK experience sexual consequences of cancer and its treatment, an aspect of survivorship and rehabilitation that receives relatively scant attention in service provision, policy development and research terms. This overview addresses the sexual impact of radical pelvic radiotherapy for the more common (prostate, ano-rectal, cervical and endometrial) adult malignancies. Through discussion of the clinical assessment and management of desire, arousal, orgasmic and sexual pain difficulties that arise after pelvic radiotherapy, this overview offers an integrated biopsychosocial model of practice that incorporates the physical, psychological and relationship elements of these treatment sequelae. It is important that clinicians raise the profile of the sexual consequences of cancer treatment as a legitimate aspect of survivorship and service provision. Only in this way can the identification and management of treatment-induced sexual difficulties, frequently experienced by patients and their partners, be better understood and managed. Increased focus on the sexual consequences of treatment and cancer survivorship more broadly may, in time, lead to greater clinical recognition, service development and, most importantly, increased research devoted to the effective management of what remains a neglected aspect of cancer care.

Key words: Pelvic radiotherapy; sexual consequences; sexual rehabilitation

Statement of Search Strategies Used and Sources of Information

A search was carried out using the Pubmed online database system together with a selective hand search of key review papers, psychosexual and sexual medicine texts.

The search was limited to the years 2000–2015, English-language papers, clinical research and review papers addressing sexual consequences of pelvic radiotherapy treatment for gynaecological, prostate and ano-rectal malignancies.

Introduction

In exploring the prevalence of and professional response to treatment-induced sexual difficulties encountered in oncology, it may be useful to consider the prevalence and types of sexual concern or difficulty commonly encountered in a normative adult population sample from the UK. The third national survey of sexual attitudes and lifestyles (Natsal-3) sampled 15 162 individuals aged 16–74 years living in three countries (NI excluded) of the UK, achieving a participation rate of 57% (4913 men and 6777 women).

Sexual inactivity was not in itself defined as problematic, as a large proportion of sexually inactive individuals in this survey were not dissatisfied, distressed or avoiding sex because of sexual difficulties. Low sexual function was subsequently defined as the lowest quintile (20%) of the distribution of scores obtained [1]. Participants reporting low levels of sexual function varied with age from 14.1% in

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http://dx.doi.org/10.1016/j.clon.2015.06.018

the 16–24 year age group to 27% overall in the 65–74 year age group.

Sexual difficulties lasting >3 months in the past 12 months reported by male survey participants included lack of sexual interest (14.9%), rapid ejaculation (14.9%) and erectile dysfunction (12.9%), whereas female participants reported a higher prevalence of low sexual interest (34.2%), orgasmic difficulties (16.3%), vaginal dryness and sexual pain (13%) and lack of sexual enjoyment (12.1%).

The prevalence of low sexual function was highest in the 55–64 year age group (27.8%) and there was a strong association between low sexual function and age >55 years, menopause, depression, poor self-assessed general health and relationship dissatisfaction [1]. Similar results have been reported by national surveys in the USA, with over 50% of sexually active older adults (57–85 years) reporting a sexual problem that lasted several months [2].

Prevalence rates of sexual difficulties associated with cancer and its treatment vary widely depending on primary diagnosis, treatment modality, method(s) of assessment and threshold criteria for severity and type of sexual difficulty or dysfunction, but tend to be considerably higher than those encountered in the general adult population. A recent survey [3] of patients offered pelvic radiotherapy as a primary or adjuvant treatment ($n = 418$, 57.1% response rate) found that 24% of women and 53% of men stated that their treatment had adversely affected their ability to have a sexual relationship. Furthermore, treatment-related symptoms were as frequent in people 6–11 years after radiotherapy as those within 1–5 years after treatment.

Although radiation-induced menopause or hypogonadism may be the precipitants of low or absent sexual desire, it is also the wider emotional and physical effects of illness and treatment that maintain loss of sexual interest [4–6]. Loss of sexual desire commonly accompanies the emotional response to a diagnosis of cancer (anxiety/depression) and the psychological demands of intensive and protracted treatment. Furthermore, women and men experience multiple impacts on their reproductive potential, femininity or masculinity and sense of sexual attractiveness, resulting in reduced sexual confidence and frequency of sexual expression [7,8].

Prospective studies using validated questionnaires indicate erectile dysfunction rates of between 30 and 40% up to 60–70% at 1–2 years post-external beam radiotherapy for prostate cancer, with no further deterioration at 36 months [9,10]. Rates after brachytherapy tend to be lower, ranging from 5 to 51%, with the highest rates seen in men who have received combined external beam radiotherapy and brachytherapy [11].

Men also experience ejaculatory changes that include reduced ejaculate, ejaculatory pain, haematospermia and altered orgasmic sensation/reduced orgasmic intensity [12]. A study of 241 sexually active men after 125 I prostate brachytherapy found that 85% experienced a reduction in semen volume, with dry ejaculation accounting for 18.7% of these men. Furthermore, 30.3% of men experienced painful ejaculation compared with 12.9% pre-treatment and men experiencing anorgasmia rose from 1% pre-treatment to 10% post-radiotherapy, with 16.6% reporting a weak orgasm and 27.8% a difficult orgasm compared with 4% and 12.5% pre-treatment, respectively [13]. In men with higher risk prostate cancer there is also the need to consider the independent/additive effect of androgen deprivation therapy (ADT) on sexual desire, erectile function and orgasm/ejaculation [14].

Primary chemoradiation for anal cancer [15] and neoadjuvant chemoradiation for rectal cancer also create erectile difficulties and orgasmic changes in men and loss of sexual interest, sexual pain and orgasmic changes in women [11,14,16] with 76% of men and 62% of women reporting new or exacerbation of existing sexual difficulties in a longitudinal study after rectal cancer treatment [17].

Rates of female sexual difficulties after cervical cancer treatment range from 30 to 63%, with most of these women (62–88%) at high risk of vaginal agglutination and associated stenosis [14,16]. Despite the plethora of studies in cervical cancer there remains a paucity of data and low pre-treatment rates of sexual activity (27%) in women treated for endometrial cancer [11]. A recent review [16] explored the contribution of modern radiotherapy techniques such as intensity-modulated radiation therapy and image-guided adaptive brachytherapy to reduced levels of vaginal late effects, seen as critical for the resumption of heterosexual sexual expression in women.

The mechanism of tissue injury commonly seen 12–36 months after radical pelvic radiotherapy is predominantly that of progressive fibrosis, with endothelial damage, inflammatory changes, ischaemia and necrosis affecting pelvic vasculature and nerve plexes. For men who have received a radical radiotherapy dose for prostatic, bladder or ano-rectal malignancies, both arterial damage and changes to the neurovascular bundles, penile bulb and penile bodies result in ejaculatory and erectile difficulties of multi-factorial aetiology [9,11,12]. Furthermore, men with higher risk prostate cancer will receive neoadjuvant and adjuvant ADT that not only adversely affects sexual interest, but also affect erectile and ejaculatory function [6,12,18].

Women after pelvic radiotherapy for gynaecological or ano-rectal malignancies develop varying degrees of vaginal changes and ovarian failure depending on the primary diagnosis, treatment field and total dose (Gy) delivered to the pelvic and specifically to the vagina. The rapid cell turnover of the vaginal and vulval epithelium leads to acute mucosal erythema/desquamation followed by formation of vaginal adhesions, thinning of the vaginal wall, telangectasia and decreased elasticity with reduced vaginal length and stenosis [19]. These vaginal changes, together with dose- and age-related temporary or permanent ovarian failure, also result in reduced/absent vaginal lubrication and treatment-induced early menopause [16,20].

Sexual pain is a frequent result of such vaginal changes and, in couples who engage in anal intercourse as part of their sexual repertoire, pain can also result from ano-rectal changes such as stenosis, mucosal inflammation and ulceration.