

SEXUAL MEDICINE REVIEWS

Urological Survivorship Issues Among Adolescent Boys and Young Men Who Are Cancer Survivors

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ABSTRACT

Background: Urological survivorship issues encompass an area that may potentially be overlooked after treatment of childhood cancer in adolescent boys and young men. Side effects of cancer therapy may include subsequent development of erectile dysfunction (ED), hypogonadism, and infertility in adulthood.

Aim: The purpose of this review is to focus on the etiology and prevalence of the range of sexual and gonadal dysfunction in adolescent boys and young men who are cancer survivors, while discussing current recommendations for evaluation and treatment.

Methods: We performed a literature review of articles evaluating hypogonadism, sexual dysfunction, ED, and infertility in young men cancer survivors.

Outcomes: There is compelling evidence that significant survivorship issues are faced by boys entering adulthood after completing cancer therapy.

Results: Overall, young men cancer survivors are much more likely to report symptoms of sexual dysfunction than the general population of men. These patients can develop ED due to physiologic and psychological changes that take place with diagnosis of a malignancy and subsequent treatment. Primary hypogonadism can arise due to pelvic radiation or chemotherapy, and central hypogonadism may arise from pituitary insufficiency after brain radiation or surgery. Infertility develops from direct damage to the Sertoli cells and germinal epithelium from radiotherapy or chemotherapy. Cancer survivors who are men should therefore be screened for these important urological survivorship issues, although exact surveillance strategies remain unclear.

Conclusions: Urological survivorship issues including ED, hypogonadism, and infertility are common among cancer survivors and result in significant morbidity. Due to the medical complexity of cancer survivorship, the population of adolescent and young adult survivors would benefit from a network of multidisciplinary survivorship experts to aid the transition into adulthood. Improved research efforts may help to clarify risk factors and to develop enhanced strategies for evaluation and treatment. **Sukhu T, Ross S, Coward RM. Urological Survivorship Issues Among Adolescent Boys and Young Men Who Are Cancer Survivors. Sex Med Rev 2018;XX:XXX–XXX.**

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Key Words: Sexual Dysfunction; Cancer Survivorship; Hypogonadism; Erectile Dysfunction; Infertility

INTRODUCTION

Improvements in the treatment of childhood cancer have had a notably positive impact on survival rates. In fact, more than 80% of children diagnosed with cancer will survive long term.¹ To date, there are over 400,000 survivors of childhood cancer in the United States.² Treatment of childhood cancer can result

in long-term medical problems, including urological issues such as sexual dysfunction, hypogonadism, and infertility, as well as mental health issues that may also impact these urological problems. As adolescent boys and young men survive their disease, it is important to evaluate for and address these sensitive but important medical issues that can be overlooked in this population.

These patients are often not followed up in an organized manner after their acute treatment is completed. In addition, it is rare to have planned transition of care, thus leaving primary care physicians to address the post-survival sequelae of chemotherapy and radiation treatment. While some physicians may be familiar with common side effects of cancer treatment such as lung and heart disease, many may be unaware of the details of their

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patient's cancer protocols and the complex urological issues that can follow.^{3,4} The combination of poor transition options, various protocols, and variable side effects often leave urological problems unaddressed.

Without increased awareness of these complications, the burden of addressing post-cancer urological diseases may unfortunately fall on the patient. While patients are expected to remember discussions of the sequelae of their cancer treatments, it is well established that the stress of a cancer diagnosis, coupled with the mental and physical stress of therapy, most often results in a loss of these detailed discussions. Patients and families often do not remember side effects such as gonadal dysfunction.⁵ Additionally, during treatment, the specifics of quality-of-life survivorship sequelae such as sexual health issues may not be sufficiently reviewed by medical providers who are understandably more focused on cancer survival. Lastly, some urological symptoms do not arise until many years after the patient's curative treatment. Young adults must face survivorship issues just as they are transitioning to adulthood and beginning to focus on educational and career goals, establish new relationships, consider children, and focus on financial independence. In some cases, increased focus on these other aspects of life may result in a low importance being placed on dealing with their medical care, and physicians must be the ones to decipher the issues and help prioritize them.⁶

Ideally, these complex patients should have a primary care provider who can coordinate with needed subspecialists in order to provide comprehensive follow-up cancer care. There are models of multidisciplinary care and guidelines in place for long-term follow-up of childhood cancer survivors that can help to elucidate the responsibilities of primary and subspecialty health care providers.^{7,8} Multiple studies have focused on the aspect of infertility in this population; however, there is very little emphasis on sexual dysfunction and hypogonadism in boys and young men who are survivors of childhood cancers. In this review, our goal is to focus on the etiology and prevalence of the range of sexual problems, gonadal dysfunction, and infertility in these patients, while discussing current recommendations for evaluation and treatment.

SEXUAL DYSFUNCTION

Etiology

Sexual health has been defined as the physical, emotional, mental, and social well-being in relation to sexuality, which can affect global health of the patient.⁹ Despite the relationship between sexual health and overall health, little is known about sexual function in adolescent boys and young men who survive childhood malignancies.¹⁰ As the number of survivors rises, it will be increasingly important to recognize the sexual difficulties these patients confront.

It is clear there are direct associations between curative treatments for cancer and damage to sexual organs, leading to

sexual dysfunction and future problems with intimacy and self-esteem.^{11,12} Overall, cancer survivors are 3 times more likely to report sexual issues than the general adult population.¹³ 2 Common causes of sexual dysfunction in this population are hypogonadism due to gonadal, hypothalamic, or pituitary injury, or direct damage to pelvic nerves and vessels.¹⁴ The effect of hypogonadism can be seen in testicular cancer survivors, where it is clear that low testosterone has a negative effect on the quality of the sexual experience.¹⁵ Men treated for hematologic malignancies with mild Leydig cell dysfunction experience similar effects and are likely to have less sexual activity.¹⁶ In 1 study of 599 survivors who completed standardized tools, 32% of male survivors disclosed a problem in 1 or more areas of sexual function, with these individuals more likely to experience distress linked to sexual difficulties (Table 1).¹²

Types of Sexual Dysfunction

Sexual difficulties for the young men who are survivors can vary. They may experience pain with erections or orgasm, trouble achieving an orgasm, premature ejaculation, or erectile dysfunction (ED).¹⁴ However, ED and premature ejaculation are reportedly the most common sexual problems.¹⁷ Psychosocial factors may also strongly contribute to sexual problems in this population. Studies demonstrate that the diagnosis of a malignancy at a young age can have a negative impact on sexual identity and psychosexual development.^{11,18} The fear of being treated differently by peers due to the diagnosis and treatment of cancer can affect psychosexual development and disturb the maturation of normal sexual behaviors such as masturbation, dating, and discussion of sex with peers.^{18–20} These sequelae further delay normal relationships typically formed through dating, participation in sexual activity, and marriage.^{12,21} Although the majority of young men who are cancer survivors are sexually active, they are less likely than their siblings to have had a sexual experience in the past year.²² While this could be due to many factors, and attributing this to their cancer diagnosis or treatment is unsubstantiated, it is an interesting finding that should be explored in future studies.

Many cancer survivors develop a negative body image during treatment that persists and prevents development of their sexual identity, thus creating an additional barrier to normal sexual function.²³ When assessing the quality of life and psychosocial well-being of acute lymphoblastic leukemia survivors, treatment of cancer has been shown to result in low physical functioning and emotional well-being compared to the general population.²⁴ A negative body image may stem from physical features that result from treatment, such as stretch marks and scars. In addition, shortened height or delayed puberty can result from treatment, and may result in poor self-esteem and increased feelings of isolation or being different from peers.^{12,25,26} The absence of a sexual identity can delay involvement in physical and emotional intimacy, isolating these patients socially.

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