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Damocles' Syndrome Revisited: Update on the Fear of Cancer Recurrence in the Complex World of Today's Treatments and Survivorship

Margaret Cupit-Link^{a,*}, Karen L. Syrjala^{b,c}, and Shahrukh K. Hashmi^d

^aMayo Medical School, Mayo Clinic, Rochester, MN, USA

^bBiobehavioral Sciences Department, Fred Hutchinson Cancer Research Center, University of Washington School of Medicine, Seattle, WA, USA

^cDepartment of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, WA, USA

^dMayo Clinic Cancer Center, Mayo Clinic, Rochester, MN, USA

Abstract

Objective/Background—Improvements in curative treatments for many types of cancer have emerged over the past several decades, resulting in a growing population of long-term cancer survivors—of both adult and childhood cancers. Despite this incredible medical achievement, long-term survivors of cancer face a unique fear: the fear of relapse.

Methods—We conducted a review of the literature for data on fear of relapse among cancer survivors.

Results—The fear of cancer recurrence is present in survivors of childhood and adult cancers as well as family members and often leads to psychological sequelae.

Conclusion—Literature on the fear of cancer recurrence has begun to emerge. However, herein we provide a unique approach through the use of a metaphor: Cicero's story of Damocles' sword. We aim to outline the many fear-related and emotional challenges faced by cancer survivors with an extensive review of studies demonstrating such challenges.

Keywords

anxiety; cancer; fear of recurrence; relapse; survivorship

*Corresponding author. Mayo Medical School, Mayo Clinic, 200 First Street Southwest, Rochester, MN 55902, USA. cupit-link.margaret@mayo.edu (M. Cupit-Link).

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There are no conflicts of interest to disclose from any authors.

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Introduction

The Roman philosopher Cicero wrote about Dionysus, the tyrant king of Syracuse. In one story, the courtier Damocles expresses his belief that Dionysus is the most fortunate man in the world. Wishing to teach him a lesson, Dionysus allows Damocles to sit on his throne, giving him all of his riches. In the midst of Damocles' enjoyment, Dionysus suspends a sword over Damocles' neck, dangling by a single horsehair. Preoccupied with the danger of the sword, Damocles is no longer able to enjoy the beauty around him. No longer wishing to be so fortunate, he begs Dionysus to take back his throne.

For Damocles, great fortune was not worth the unrelenting fear that accompanied it. Damocles' outlook is shared today by many, particularly survivors of childhood or adult cancers. The "mixed blessings" consequences faced by survivors of childhood cancer were first described using the story of "Damocles' Sword" as an analogy in the early 1980s.¹ Survivors are given a new lease on life, but also persisting fears of recurrence, subsequent malignancies, and long-term health sequelae after cancer treatment. The cancer survivor experiences hope and celebration as well as uncertainty, fear, and hypervigilance to new symptoms.² New cancer treatments and increasing recommendations for watchful waiting in lieu of active treatment leave even more survivors with Damocles' view of their futures (Figure 1).

Childhood cancer survivors

Awareness of this phenomenon—what we call the "Damocles' sword effect" (DSE)—is pertinent due to an increasing number of survivors previously treated for childhood and adolescent cancer. According to a 2014 report,³ the overall survival rate for all childhood and adolescent cancers is nearly 85%. It is now both possible and imperative to focus on quality of life (QoL) among these survivors. In 1998, the American Cancer Society Task Force on Children and Cancer reported, "the progress achieved in attaining 80% survival among children and adolescents and young adults with cancer can be justified *only* if their physical, emotional, and social QoL also are protected."⁴ We agree with this statement. Previous reports have summarized many of the hardships faced by survivors of childhood and adolescent cancer as they age.^{5–8} These include lack of follow-up care, long-term health sequelae, and psychosocial challenges.

While many studies have attempted to quantify the mental health disparities among childhood and adolescent cancer survivors using surveys, no known studies have specifically addressed the association of the fear of recurrence (FoR) with health-related sequelae among childhood cancer survivors. Data from many studies imply the presence of the DSE. A meta-analysis of studies addressing psychosocial adjustment among adolescent survivors of pediatric cancer suggested that increased anxiety existed in this population due to FoR.⁹ Multiple studies have found post-traumatic stress disorder (PTSD) to be more prevalent among survivors of pediatric cancer.¹⁰ Compared with controls, greater anxiety and depression exist among pediatric cancer patients following completion of cancer therapies, with higher rates after the end of therapy than during treatment.¹¹ Anxiety disorders are also significantly more common among long-term survivors of cancer during adolescence.¹² Compared with their siblings, survivors of childhood leukemia and lymphoma have

significantly increased risk of depression and somatic distress.¹³ Survivors of childhood cancer also have increased rates of suicidal ideation, anxiety, and global distress.¹⁴

This picture is complicated due to conflicting data. Many survivors of childhood cancer appear to be psychologically similar to healthy controls. Psychological QoL is reportedly similar between survivors and sibling controls in all areas except in physical domains.¹⁵ Certain subsets of the survivor population may be more susceptible to the DSE than others. A study of young adult cancer survivors found 16% of survivors to have PTSD.¹⁶ Another study found that most survivors lead “normal adult lives,” while a small subset demonstrates anxiety, depression, and/or FoR or a subsequent malignancy.¹⁷ These sequelae were associated with female sex, lower socioeconomic status, unemployment, and poor education.¹⁷

A study of the psychological consequences of surviving childhood cancer concluded that psychological outcome was only impacted among certain groups, including bone and brain malignancies.¹⁸ This might be due to the length of therapy required for these types of cancer when compared with others, such as Hodgkin’s lymphoma. Survivors diagnosed as adolescents have significantly greater psychological distress than those diagnosed at a younger age.¹⁹ Adult survivors of childhood cancer are at increased risk for suicidal ideation.²⁰ These findings suggest that the consequences of living with uncertainty go well beyond FoR.

Studies of childhood cancer survivors have identified subsets of survivors with psychological and social difficulties many years beyond completion of therapy, stemming from PTSD, impaired self-esteem/body image, and employment/health insurance discrimination.² Although some data indicate that many survivors of childhood cancer grow in positive ways from their experiences with cancer and are psychologically well adjusted, even these survivors express concerns about the potential for recurrence or other late complications of their treatments.

Despite a mixed picture of psychological outcomes, children with cancer benefit from comprehensive behavioral support in the form of psychiatry, psychology, child life therapy, education, chaplaincy, social work, and career counseling.²¹ Children who survive cancer and their families must undergo a unique transition and period of psychosocial adaptation,²¹ with needs that may reawaken anxiety and worry at future developmental points in their lives.

Family stress reactions

Apart from survivors of childhood and adolescent cancer themselves, families—including parents and siblings—are greatly impacted by the shift in lifestyle necessitated by pediatric cancer. Adolescent survivors of childhood malignancies have lower levels of family cohesion than controls.²² The cancer patient’s needs and QoL become a preoccupation and priority for many parents.²³ Both mothers and fathers of children newly diagnosed with cancer report significantly altered perceptions of self and family functioning when compared with controls.²⁴ Marriages are often altered. The prevalence of PTSD among mothers of pediatric cancer survivors has been compared with that of mothers of children without

chronic illnesses.²⁵ More than half (54%) of the mothers of survivors had lifetime diagnosis of PTSD, compared with 4% among the control group. Interviews reflected that the PTSD resulted from the stress associated with parenting a child with cancer.

Siblings also struggle. Children with siblings with chronic illnesses have more behavioral problems.²⁶ As parents dedicate increased time and attention to the patient, many siblings of cancer patients develop conduct problems, psychosomatic problems, and behavioral issues within 3 months of diagnosis.²⁷ Even 2 years after diagnosis, siblings of cancer patients demonstrate reduced QoL compared with age-matched controls, reporting emotions of fear, isolation, jealousy, and guilt.²⁸

Adult cancer survivors

Although the Damocles' effect was originally described in pediatric cancer survivors, survivors of adult cancers face similar challenges in living with uncertainty and fear. The most abundant data on FoR are found among breast cancer survivors, in which FoR is highly prevalent and has a negative impact on QoL. The prevalence of PTSD among survivors of breast cancer is elevated.²⁹ A systematic review found that up to 32.3% of patients with breast cancer develop PTSD.³⁰ In a multicenter study of 2,671 women evaluated for FoR, 99% of women reported FoR.³¹ Substantial proportions experienced moderate (11%) and high (6%) FoR. Higher FoR was associated with both depression and poorer QoL.

A systematic review of quantitative studies concluded that adult cancer survivors consider FoR as one of their top concerns and the most frequently endorsed unmet need.³² Because of significant advancements in cancer therapeutics, certain adult cancers are now considered to be chronic diseases rather than life-threatening or terminal diagnoses.³³ Chronic myelogenous leukemia and multiple myeloma, in particular, can be treated by targeted therapies with relatively few side effects.³⁴ Despite a near normal lifespan in the majority of these survivors, there are no data regarding their FoR. There are, however, data regarding the development of PTSD among survivors of hematological malignancies.³⁵ A relationship exists between FoR and the development of PTSD in this population. Evaluation of FoR along with QoL should thus be one of the priorities of survivorship research across survivors of all cancers.

Keeping the sword at bay: coping mechanisms

Because of many clinicians' familiarity with the phenomenon of FoR among cancer survivors, an increasing number of investigations have addressed coping mechanisms for patients who suffer from the DSE. Listed in Table 1, these coping mechanisms can be thought of as strategies to remove the sword that hangs over the patient—or at least keep the sword at bay.

Studies on both the general population and cancer patients specifically have proven the efficacy of cognitive behavioral therapy (CBT) in treating anxiety. CBT is a type of psychological therapy that has been utilized for a range of symptoms and emotional distress among cancer patients both during and after the end of treatment.³⁶ It has also been studied as a treatment for FoR. In a recent randomized controlled trial among survivors of breast,

prostate, and colorectal cancers, CBT significantly reduced cancer anxiety among 29% of recipients.³⁷ This type of therapy has also been successful in treating anxiety and PTSD among childhood and adolescent cancer survivors of every age.³⁸

When FoR contributes to an anxiety disorder, pharmacological treatments may be needed as well. Although CBT has received the most empirical support for the treatment of anxiety disorders, combining pharmacological treatments with psychological treatment is thought to be even more effective.³⁹ The first line of pharmacological therapy for anxiety is typically a selective serotonin reuptake inhibitor. Serotonin and norepinephrine reuptake inhibitors are often used after failure or inadequate response to a selective serotonin reuptake inhibitor. If these options are ineffective, other medications may be helpful (Table 1).⁴⁰

Additional nonpharmacological treatments and practices may be particularly useful for patients with FoR, as they often contribute to empowerment, confidence, and mindfulness (Table 1).

Conclusion

Improved cancer survival in the current era of immunotherapies and personalized medicine without long-term data on outcomes in both pediatric and adult cancers are driving a revolution in the cancer survivorship paradigm. This increased longevity comes with a price of escalating rates of certain late effects, particularly psychosocial comorbidities. This review focuses on the DSE, related to FoR, but extending beyond recurrence to the other uncertain consequences after survival is uncharted territory. There are many useful coping mechanisms that are helpful in treating patients with FoR, including but not limited to CBT. These tools should be provided to patients as soon as possible to keep Damocles' sword at bay. In the current era of patient-centered care, it is imperative that the scientific and clinical communities study and provide solutions for all issues on survivorship health, including FoR, so that Damocles' sword does not hang over the lives of millions of cancer survivors.

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Figure 1.
An artistic depiction of a cancer survivor who lives in the constant shadow of a previous cancer diagnosis.

Table 1

Tools for Coping with Damocles' Sword Syndrome

Type of Intervention	
Psychological interventions	Cognitive behavioral therapy <ul style="list-style-type: none"> • Acceptance and commitment therapy • Cognitive reframing • Exposure therapy
	Cognitive-existential therapy
	Group therapy
Pharmacological interventions	Selective serotonin reuptake inhibitors <ul style="list-style-type: none"> • Fluoxetine • Sertraline • Citalopram • Escitalopram • Fluvoxamine • Paxil
	Serotonin and norepinephrine reuptake inhibitors <ul style="list-style-type: none"> • Venlafaxine • Desvenlafaxine • Duloxetine
	Tricyclic antidepressants <ul style="list-style-type: none"> • Amitriptyline • Nortriptyline
	Antiepileptics <ul style="list-style-type: none"> • Gabapentin • Pregabalin • Topiramate • Lamotrigine • Valproate
	Atypical neuroleptic agents <ul style="list-style-type: none"> • Hydroxyzine • Mirtazapine • Nefazodone
Complementary and alternative interventions	Treatments <ul style="list-style-type: none"> • Acupuncture • Massage • Music therapy

Type of Intervention	
	<p>Practices</p> <ul style="list-style-type: none">• Yoga• Tai-Chi• Meditation• Religion/Prayer

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