



## Invited Minireview

# Psychosocial intervention effects on adaptation, disease course and biobehavioral processes in cancer

Michael H. Antoni\*

Department of Psychology, 5665 Ponce DeLeon Blvd., University of Miami, Coral Gables, FL 33124, United States

## ARTICLE INFO

## Article history:

Available online 22 May 2012

## Keywords:

Psychosocial intervention  
Stress management  
Survival  
Recurrence  
Cancer  
Biobehavioral processes

## ABSTRACT

A diagnosis of cancer and subsequent treatments place demands on psychological adaptation. Behavioral research suggests the importance of cognitive, behavioral, and social factors in facilitating adaptation during active treatment and throughout cancer survivorship, which forms the rationale for the use of many psychosocial interventions in cancer patients. This cancer experience may also affect physiological adaptation systems (e.g., neuroendocrine) in parallel with psychological adaptation changes (negative affect). Changes in adaptation may alter tumor growth-promoting processes (increased angiogenesis, migration and invasion, and inflammation) and tumor defense processes (decreased cellular immunity) relevant for cancer progression and the quality of life of cancer patients. Some evidence suggests that psychosocial intervention can improve psychological and physiological adaptation indicators in cancer patients. However, less is known about whether these interventions can influence tumor activity and tumor growth-promoting processes and whether changes in these processes could explain the psychosocial intervention effects on recurrence and survival documented to date. Documenting that psychosocial interventions can modulate molecular activities (e.g., transcriptional indicators of cell signaling) that govern tumor promoting and tumor defense processes on the one hand, and clinical disease course on the other is a key challenge for biobehavioral oncology research. This mini-review will summarize current knowledge on psychological and physiological adaptation processes affected throughout the stress of the cancer experience, and the effects of psychosocial interventions on psychological adaptation, cancer disease progression, and changes in stress-related biobehavioral processes that may mediate intervention effects on clinical cancer outcomes. Very recent intervention work in breast cancer will be used to illuminate emerging trends in molecular probes of interest in the hope of highlighting future paths that could move the field of biobehavioral oncology intervention research forward.

© 2012 Elsevier Inc. All rights reserved.

## 1. Psychological adaptation during the cancer experience

### 1.1. Psychological challenges in cancer

A diagnosis of cancer and its treatments are stressful. Chief concerns of patients once diagnosed with cancer involve fears of recurrence, being damaged by adjuvant therapy, not seeing children grow, premature death, and loss of social ties and activities (Stanton, 2006; Spencer et al., 1999). Emotional distress and negative affect states are common after a cancer diagnosis and treatment and contribute to poorer psychological well being especially if persisting after treatment (Cordova et al., 1995). Frequently reported psychosocial phenomena during the cancer experience include increased anxiety, depressed mood, social disruption, and sleep and fatigue-associated disruption (Ganz et al., 2002; Stanton, 2006). Although

quality of life (QoL) generally improves markedly after cancer treatment and into the survivorship period (Bloom et al., 2007), this is not always the case (Stein et al., 2008). Poorer psychological adaptation after diagnosis and during treatment predicts diminished QoL many years later (Carver et al., 2005; Steginga et al., 2009; Wenzel et al., 2005) and may be associated with physiological processes (e.g., neuroendocrine and immune system regulation) relevant for their health status and QoL (Antoni et al., 2006a,b).

### 1.2. Cognitive, behavioral and social factors and adaptation to cancer

Individuals vary considerably in their psychological responses to and recovery from the stress of diagnosis and treatment of cancer. Work examining individual difference factors in psychological adaptation suggests the importance of cognitive, behavioral and social factors, which forms the rationale for many of the psychosocial interventions developed for cancer patients (see Antoni, 2003 for review). A small sample of these is now listed. Cognitive factors influencing how the experience of cancer is appraised (optimistic

\* Address: Biobehavioral Oncology Program, Sylvester Cancer Center, University of Miami Miller School of Medicine, Miami, FL, United States. Tel./fax: +1 305 284 3219.

E-mail address: [mantoni@miami.edu](mailto:mantoni@miami.edu)

rational appraisals) may enhance adaptation and QoL during treatment, during the year after surgery, and several years later (Brothers and Andersen, 2009; Carver et al., 2005). Behavioral factors (e.g., having relaxation skills during cancer treatment) are associated with less distress and better adaptation after cancer treatment (Andersen et al., 2007a,b; Luebbert et al., 2001). Many other behavioral factors are relevant for adaptation and health outcomes including physical exercise, diet, and medication adherence as reviewed elsewhere (Andersen et al., 1994; McGregor and Antoni, 2009). Social support may be associated with both adaptation to cancer (Talley et al., 2010) and to longer-term health outcomes (Nausheen et al., 2009; Pinquart and Duberstein, 2010). The support that cancer patients receive, often coming from spouse or family members, is both the most helpful to patients in managing distress and may also be the most harmful if mismanaged (Figueiredo et al., 2004; Friedman et al., 2005; Wimberly et al., 2005). Thus, interpersonal skills may be particularly important for these patients as they communicate their needs to their support network. Taken together, this work suggests that cancer patients may psychologically adapt better to the cancer experience if they possess the cognitive, behavioral and social skills necessary to meet the challenges of treatment. It is plausible that cancer patient's physiological adaptation to stressors may also mirror their psychological adaptation.

## 2. Physiological adaptation processes relevant during the cancer experience

Cancer diagnosis and treatment induce acute and chronic stress and reduced QoL, which may affect neuroimmune regulation promoting inflammatory processes that could contribute to both symptom exacerbation and metastasis (Antoni et al., 2006a,b; Andersen et al., 1994). As noted elsewhere in this Special Issue of *Brain, Behavior and Immunity*, chronic stress, negative affect and social adversity have also been associated with biobehavioral alterations (increased sympathetic nervous system [SNS] signaling, hypothalamic pituitary adrenal [HPA] axis dysregulation, inflammation and decreased cellular immunity), which could interact with the tumor microenvironment to promote factors favoring tumor growth (e.g., angiogenesis), invasion (e.g., tissue remodeling and epithelial-mesenchymal transition), and metastatic signaling (e.g., anoikis), during and after cancer treatment (Lutgendorf and Sood, 2011).

Animals with tumors and treated cancer patients show HPA axis dysregulation – including elevated total and nocturnal cortisol output and decreased diurnal variation – which may be aggravated by stress and negative affect and could promote inflammatory processes (Sephton and Spiegel, 2003). It is not clear to what extent HPA dysregulation derives from stress and depression-induced leukocyte glucocorticoid receptor resistance, or if it is secondary to tumor- or treatment-produced inflammatory products, or both. Chronic stress and negative affect may support inflammatory processes, both by stimulating pro-inflammatory cytokine secretion and disrupting HPA axis-related inflammatory control (Miller et al., 2002). Importantly, altered diurnal cortisol dysregulation also relates to poorer survival in women with metastatic breast cancer (BCa) (Sephton et al., 2000).

Longitudinal studies show that while distress decreases after adjuvant therapy begins and quality of life improves after treatment for many cancer patients (Bloom et al., 2007), lingering physical challenges such as fatigue can peak during treatment and persist thereafter in breast cancer patients (Schmidt et al., 2012) and other cancer survivors (Stein et al., 2008). In some breast cancer patients, distress levels may remain elevated vs. matched healthy controls up to 15 months after diagnosis (Hinnen et al., 2008). In fact, there is a growing awareness of the need to screen for psychological distress in all cancer patients (Jacobsen, 2007).

Some cancer patients' ability to carry out daily activities decreases during and after treatment, distress may increase, which can trigger interpersonal strain, a cascade that may further deplete energy resulting in negative mood, disrupted sleep and fatigue. Because distress reactions appear to be a possible common denominator contributing to multiple abnormalities (decreased psychological adaptation, HPA axis, and cytokine dysregulation) characterizing cancer treatment, then one component of effective treatment might focus upon improving psychological adaptation via psychosocial intervention. Cancer patients with less social support also experience more anxiety, greater cortisol levels, and molecular evidence consistent with impaired transcription of glucocorticoid response genes, and increased activity of pro-inflammatory transcription control pathways (Lutgendorf et al., 2010b). This suggests that psychosocial interventions teaching stress management skills (relaxation and coping strategies) to decrease distress and interpersonal skills to build social support may be particularly relevant for cancer patients (Antoni, 2003).

It is plausible that poorer psychological adaptation to cancer could exacerbate stress-associated alterations in neuroendocrines, cellular immune function, and pro-inflammatory signaling which could promote cancer progression. To date there are very few studies that have experimentally demonstrated a stress-induced change in either immune system indicators or tumor growth factors that predicts survival and cancer recurrence in humans. Conducting such a test essentially involves using a psychosocial intervention to modulate psychological adaptation (decrease distress and adversity states and improve positive states) in cancer patients, monitoring changes in stress-associated biobehavioral processes (SNS activation, HPA axis regulation, inflammation and cellular immune functioning), processes that promote tumor growth (tissue modeling and invasion, angiogenesis, apoptosis, anoikis) and then following these cohorts of patients for evidence of effects on disease course (recurrence, mortality). This involves recruiting a cohort of diagnosed cancer patients into a trial of a psychosocial intervention at a critical juncture in the cancer continuum (e.g., at the time of treatment for primary disease or at the point of disease recurrence), monitoring for initial improvements in psychological adaptation (reduced distress and depression and increased positive states); and following them over months for intermediate changes in SNS and HPA activity, inflammation, cellular immunity in plasma, circulating immune cells, and tumor cells if possible; and then following them for 5–10 years for clinical outcomes. There is now exciting preliminary evidence that several of these biobehavioral changes may indeed follow from psychological interventions designed to help cancer patients adapt. Before detailing these studies we summarize the research demonstrating the efficacy of psychosocial interventions designed to help cancer patients adapt to treatment.

## 3. Psychosocial intervention effects on psychological adaptation, stress-related biobehavioral processes, and cancer progression

Because cognitive, behavioral and social factors can affect how cancer patients adapt to diagnosis and treatment for cancer, many investigators have evaluated the effects of psychosocial interventions on psychological adaptation during cancer treatment. These interventions were designed to *cognitively* modify outlook, stress appraisals and coping via cognitive behavioral therapy (CBT); *behaviorally* reduce tension, anxiety and distress through relaxation training, mindfulness, hypnosis, yoga, and other techniques; and *interpersonally* build skills like assertiveness and anger management, in a group format to improve perceived social support and communication. In sum, psychosocial interventions have been developed to allow cancer patients to learn relaxation and other

Download English Version:

<https://daneshyari.com/en/article/10454769>

Download Persian Version:

<https://daneshyari.com/article/10454769>

[Daneshyari.com](https://daneshyari.com)