



Panic attacks and smoking cessation among cancer patients receiving smoking cessation treatment



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HIGHLIGHTS

- Panic attacks are common in smokers with a cancer diagnosis (21.9%).
- Panic attacks are associated with decreased likelihood of smoking abstinence.
- Early abstinence, but not later, were affected by panic attack status.
- Panic attacks should be addressed as barriers to cessation in cancer patients.

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ABSTRACT

Objective: Little is known about factors associated with smoking cessation in cancer patients. This study examined the impact of panic attacks on smoking abstinence likelihood among cancer patients receiving tobacco cessation treatment.

Method: The relationship of panic attacks to 7-day point-prevalence abstinence at mid-treatment, end of treatment, and 6-month post-end of treatment were examined among cancer patients ($N = 2255$ patients; 50.1% female; $M_{age} = 54.9$, $SD = 11.0$) who received counseling and pharmacotherapy for smoking cessation. Panic attack history indexed by two questions from the Patient Health Questionnaire (PHQ). Point-prevalence abstinence was assessed via the Timeline Follow-Back.

Results: Cancer patients with a history of panic attacks, ($n = 493$, 21.9%) relative to those without, were less likely to be abstinent at mid-treatment ($OR = 0.79$, $CI_{95\%} = 0.64–0.98$) and end of treatment ($OR = 0.72$, $CI_{95\%} = 0.58–0.89$). After adjusting for significant covariates, panic attack history remained predictive of decreased abstinence likelihood at end of treatment ($OR = 0.78$, $CI_{95\%} = 0.62–0.99$).

Conclusions: Panic attacks may be related to poorer cessation outcome during smoking treatment among cancer patients, and may be usefully assessed and targeted for intervention.

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1. Introduction

It is estimated that 14–58% of smokers continue to smoke after receiving a cancer diagnosis (Cox, Africano, Tercyak, & Taylor, 2003).

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Continued smoking among individuals who have been diagnosed with cancer is associated with cancer progression and treatment complications (Gritz, Dresler, & Sarna, 2005), while quitting smoking is associated with better cancer treatment outcomes and improved quality of life (Chen et al., 2012; Cox et al., 2003; Gritz et al., 2005; Toll, Brandon, Gritz, Warren, & Herbst, 2013), in addition to the typical health benefits of smoking cessation (e.g., decreased risk of tobacco-related disease, improved lung functioning). The National Cancer Institute and the American Association for Cancer Research guidelines recommend universal assessment and documentation of tobacco use among cancer patients, availability of tobacco treatment programs in comprehensive cancer

centers (Morgan et al., 2011; Toll et al., 2013), and call for more research on the process of smoking cessation among cancer patients (Cox et al., 2003).

Psychiatric disorders are a notable risk factor associated with the initiation and maintenance of smoking (Center for Disease Control and Prevention, 2013; Lasser et al., 2000; Piper et al., 2010; Ziedonis et al., 2008), and thus may be informative for understanding the nature of smoking among cancer patients. While relatively little scholarly work has examined the role of psychopathology in cancer patients seeking treatment to quit smoking, the presence of psychological disorders in cancer patients has been extensively reported (see reviews: Grassi, Biancosino, Marmai, Rossi, & Sabato, 2007; Kangas, Henry, & Bryant, 2002; Miovic & Block, 2007; Montel, 2010). One specific area of inquiry has addressed the presence of panic attacks among cancer patients, which is, in part, contextualized with the high prevalence of somatic worries and illness anxiety among cancer patients (Chaturvedi, Maguire, & Somashekar, 2006; Noyes, Carney, Hillis, Jones, & Langbehn, 2005). Panic attacks, which reflect a discrete sense of extreme fear or impending doom accompanied by a massive autonomic surge and strong flight-or-fight action tendency (American Psychiatric Association, 2000), are a risk marker for a relatively broad range of psychopathological conditions (e.g., Baillie & Rapee, 2005; Goodwin, Brook, & Cohen, 2005; Goodwin et al., 2004) and are associated with physical illness, poorer quality of life, and disability (e.g., Goodwin, Pine, & Hoven, 2003; Kinley, Cox, Clara, Goodwin, & Sareen, 2009).

Clinical data suggest that approximately one-fifth of cancer patients present with a current past-month history of panic attacks (Slaughter et al., 2000). Case studies indicate that panic attacks may occur prior to cancer diagnosis (Griffith & Mehra, 2008; Passik & Roth, 1999). Data also suggest that a cancer diagnosis, especially among younger patients (ages 15–54), is associated with increased odds of panic attacks (Rasic, Belik, Bolton, Chochinov, & Sareen, 2008), and that roughly 55% of cancer patients report a history of panic attacks following a cancer diagnosis (Slaughter et al., 2000). Panic attacks may result in early termination of cancer treatment due to avoidance of uncomfortable bodily sensations experienced during treatment (Slaughter et al., 2000). For example, one case series documented the presence of first-episode panic attacks in patients with head/neck cancers following head or neck surgery (Shimizu, Kinoshita, Akechi, Uchitomi, & Andoh, 2007). Here, patients reported distinct panic-relevant fears (e.g., neck stiffness indicative of feelings of being strangled), which were exacerbated by pain following surgical procedures (Shimizu et al., 2007). Additionally, certain types of panic attack symptoms (e.g., respiratory) appear to be more strongly associated with physical illness and cancer than other symptoms (e.g., cardiac or derealization symptoms; Bovasso & Eaton, 1999). It is of course worth noting that medical conditions should be ruled out as an explanation for panic attacks in this population (e.g., cancer tumors may cause panic attack symptoms; Tamburin, Cacciatori, Bonato, & Zanette, 2008; Wilcox, 1991). While specific mechanisms linking panic attacks to psychological and physical symptoms are not fully clear, panic attacks may enhance negative emotional learning in relation to various sources of interoceptive and exteroceptive cues and stressors, especially physical sensations (Bouton, Mineka, & Barlow, 2001). Collectively, these data illustrate the complex nature of panic attack symptoms in cancer patients.

There is growing evidence to suggest that panic attacks can also contribute to the maintenance of smoking (e.g., Cosci, Knuts, Abrams, Griez, & Schruers, 2010; Zvolensky, Feldner, Leen-Feldner, & McLeish, 2005). For example, smokers with a history of panic attacks relative to those without report higher levels of tobacco dependence (Piper, Cook, Schlam, Jorenby, & Baker, 2011; Vujanovic, Marshall, Gibson, & Zvolensky, 2010) and increased affect-regulatory smoking motivations (e.g., Farris, Zvolensky, Blalock, & Schmidt, 2014). Panic sensations/attacks are also associated with more severe subjective nicotine withdrawal symptom severity (Farris, Zvolensky, Otto, & Leyro, 2015), and lower success rates in quitting (Piper et al., 2011). Yet, there is no

knowledge about the role of panic attacks in quit success among smokers with cancer. One prior study from our group examined the predictive role of anxiety disorders (in addition to depressive disorders, and probable alcohol abuse/dependence) in terms of abstinence likelihood at end-of-treatment and six-months post-smoking cessation treatment among cancer patients (Blalock et al., 2011). Results indicated that cancer patients with depressive disorders and probable alcohol use disorders, but not anxiety disorders, were at a decreased likelihood of smoking abstinence at post-treatment and 6-months post-treatment, and that the comorbidity of psychopathology (depression, alcohol, and anxiety disorders) was associated with lesser odds of abstinence. This study did not examine the nature of panic attacks specifically; thus we are aware of no empirical data that have examined the interplay between panic attacks and smoking among cancer patients.

In the current study, we examined the role of panic attack history in relation to pre-treatment tobacco dependence and prediction of smoking abstinence following treatment, among cancer patients enrolled in a smoking cessation treatment program that included counseling and pharmacotherapy. We hypothesized that cancer patients with a history of panic attacks, relative to those patients with no history of panic attacks, would report higher levels of tobacco dependence, and a lower likelihood of smoking abstinence at mid-treatment, end-of-treatment, and 6-months post-treatment.

2. Method

2.1. Participants

The participants were 2255 patients (50.1% female; $M_{age} = 54.9$, $SD = 11.0$) treated by the University of Texas MD Anderson Cancer Center Tobacco Treatment Program (TTP) from 2006 to 2013.¹ The TTP provides assessment, counseling, and medication services free of charge and is available to all tobacco-using cancer patients at MD Anderson. The majority of patients (approximately 88%) were automatically electronically referred to the TTP if they self-reported using tobacco in the last 12 months. Approximately 10% of patients were referred directly from their treatment providers to the TTP, and about 2% of patients were self-referred. The patients comprising the current sample were diagnosed with head/neck (14.0%), lung (13.3%), lymphoma/hematological (9.2%), breast (8.8%), genitourinary (8.2%), colorectal/other gastrointestinal (7.4%), melanoma/other skin (4.9%), prostate (3.6%), carcinoma in situ (5.2%) or other cancers (10.4%), while 16.5% were being followed for cancer prevention (e.g., with benign neoplasm, lesions, nodule). Patients self-identified race as White (82.7%), Black (10.4%), Hispanic (3.7%), Asian (0.8%), and other (0.6%), with 1.5% not reported.

2.2. Procedure

The MD Anderson TTP treatment protocol included an initial in-person consultation followed by approximately 6–10 weeks of pharmacotherapy combined with smoking cessation counseling. The timing and duration of treatment was flexibly tailored to meet the needs of patients (i.e., patients were offered additional treatment as needed). Fig. 1 illustrates the flow of treatment and follow-up assessment points. Follow-up assessments were conducted at approximately mid-treatment (Mid-TX: 45 days after initial consultation), 45 days post mid-treatment (here, termed 'end of treatment' [EOT]; 90 days after initial consultation) and 6 months post-EOT (180 days after initial consultation). Patients are allowed to re-enroll in the TTP if desired, which is captured as an

¹ This sample partially overlaps with the sample evaluated in Blalock et al. (2011) although includes patients who completed follow-up assessments following publication of the prior study. Additionally, data from the first documented treatment episode was utilized for patients who had data available for more than one treatment episode.

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