Brief Report

Pilot Study of a Brief Behavioral Intervention for Dyspnea in Patients With Advanced Lung Cancer

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Abstract

Context. Dyspnea is a common symptom in patients with advanced cancer that interferes with functional ability and quality of life (QOL). Although few evidence-based treatments for dyspnea exist, prior studies show support for nonpharmacological interventions that include elements of cognitive-behavioral therapy.

Objectives. To examine the feasibility and utility of delivering a brief behavioral intervention for dyspnea in patients with lung cancer.

Methods. For this single-group pilot study, eligible patients included those with advanced lung cancer (Stage III or IV non-small cell or extensive-stage small cell lung cancer) receiving outpatient cancer treatment who reported at least moderate breathlessness. The manualized intervention consisted of two sessions in which nurse practitioners taught participants breathing and relaxation techniques within the infusion clinic and encouraged home practice. Participants completed measures of breathlessness (Modified Medical Research Council Dyspnea Scale), QOL (Functional Assessment of Cancer Therapy-Lung Trial Outcome Index), and anxiety and depression symptoms (Hospital Anxiety and Depression Scale) at baseline and within six weeks after enrollment.

Results. Of the 32 patients enrolled in the study (56.3% females; mean age 63.34 [SD] = 7.96 years), 84.4% ($N = 27$) completed all study procedures. Comparing the baseline to postassessments, we found significant improvements in Modified Medical Research Council Dyspnea Scale ($P < 0.001$), Functional Assessment of Cancer Therapy-Lung Trial Outcome Index ($P = 0.01$), and Hospital Anxiety and Depression Scale-depression subscale ($P < 0.001$) scores.

Conclusion. In this sample of patients with advanced lung cancer and dyspnea, we observed a high completion rate for the two-session behavioral intervention. Patients also reported improvements in dyspnea, QOL, and mood. Follow-up randomized controlled trials are needed to examine the efficacy of brief behavioral interventions for cancer-related dyspnea. J Pain Symptom Manage 2015;50:854–860.

Key Words
Non-small cell, small cell, lung cancer, dyspnea

Introduction

Dyspnea is a common and debilitating symptom of advanced cancer, with approximately one-quarter to one-half of patients reporting clinically significant symptoms.[1–3] Dyspnea reflects a subjective experience of distress or discomfort related to the sensation of breathlessness,[4] which may be episodic in nature (e.g., triggered on exertion) or continuous, occurring even at rest.[5] Rates of dyspnea are much higher as patients approach the end of life.[6]

Several correlational studies have shown a strong association between the severity of dyspnea and worse

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quality of life (QOL).[7–10] Among patients with advanced lung cancer in particular, many report clinically significant breathlessness that interferes with functioning and daily life activities.[8] Although lung malignancy underlies and exacerbates symptoms of breathlessness, patient-reported dyspnea is also associated with psychological factors, such as anxiety and depression.[11] We have found in our own investigation of patients with advanced lung cancer that those with dyspnea are more than twice as likely to report symptoms of panic disorder compared with those without breathlessness.[12]

Little evidence supports treatments for dyspnea in patients with cancer, beyond opioid administration.[13,14] Systematic reviews show no benefit from supplemental oxygen or benzodiazepines for patients with cancer-related breathlessness.[15,16] Nonpharmacological approaches for dyspnea have included supportive counseling, breathing control, muscle relaxation, coping strategies, energy conservation, and acupuncture.[13,17] Few clinical trials of these methods exist, with mixed findings regarding efficacy across techniques. Nonetheless, interventions that include elements of cognitive-behavioral therapy, such as psychoeducation and breathing retraining, have shown promise and warrant further study.[18] More recent trials have shown benefit from complex, multicomponent, intensive interventions for dyspnea,[19,20] although such approaches may be challenging to scale for patients with advanced cancer undergoing treatment.

For this single-group pilot study, we tested a brief point-of-care intervention for dyspnea. Nurse practitioners delivered the two-session behavioral intervention to patients with advanced lung cancer in the outpatient setting. The aims of the study were to evaluate the feasibility of the behavioral intervention and its potential effects on self-reported dyspnea in patients with advanced lung cancer. We also examined QOL and psychological distress as secondary outcomes given the strong associations of these factors with dyspnea.

Methods

Participants

Participant eligibility criteria included 1) age 18 years and older; 2) diagnosis of advanced lung cancer (i.e., Stage III or IV non-small cell lung cancer or extensive-stage small cell lung cancer); 3) Eastern Cooperative Oncology Group Performance Status (ECOG PS) = 0 (asymptomatic) to 2 (symptomatic but in bed less than 50% of the time)[21]; 4) ongoing outpatient oncology treatment at the Massachusetts General Hospital (MGH) Cancer Center; 5) English language literacy; and 6) Modified Medical Research Council Dyspnea Scale (MMRCDS) score ≥2 (moderate symptoms). The Dana-Farber/Harvard Cancer Center Institutional Review Board approved all study procedures.

Measures

Outcome Measures. The primary and secondary outcome measures included well-validated self-report instruments used extensively in patients with cancer.

1. Intervention feasibility (primary outcome): We examined the enrollment rate, study completion rate, as well as timing and location of the intervention administration.
2. Dyspnea (primary outcome): The MMRCDS is a validated self-report measure with a five-point grading system (from 0 to 4) to evaluate breathlessness, with higher scores indicating worse dyspnea.[22,23]
3. QOL (secondary outcome): The Functional Assessment of Cancer Therapy-Lung (FACT-L) consists of five subscales that assess physical, functional, emotional, and social well-being as well as lung cancer-specific symptoms during the previous week. For this study, we analyzed the Trial Outcome Index (TOI), which comprises the sum of the scores on the physical well-being, functional well-being, and lung cancer subscales of the FACT-L. Scores range from 0 to 84 on the FACT-L TOI, with higher scores indicating a better QOL.[24]
4. Anxiety and depression symptoms (secondary outcome): The Hospital Anxiety and Depression Scale (HADS) consists of two subscales (seven items each) measuring symptoms of anxiety and depression in the past week.[25] Subscale scores range from 0 to 21 with a threshold of >7 indicating clinically significant anxiety or depression.[26]

Chart Review. We queried participants' electronic health records to obtain information on cancer type, date of lung cancer diagnosis, ECOG PS, line of chemotherapy, opioid prescriptions, and demographic data.

Procedures

Potential participants were identified through referrals from the MGH thoracic oncology clinicians. A trained research assistant (RA) approached referred patients either privately in the outpatient clinic or by telephone to assess for interest in study participation and to confirm eligibility. Eligible patients then participated in informed consent procedures before