Original Article

Trajectories of Symptom Occurrence and Severity From Before Through Five Months After Lung Cancer Surgery

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Abstract

Context. Limited information is available about lung cancer patients' symptoms in the pre- and postoperative periods.

Objectives. Study purposes were to evaluate for changes in symptom occurrence and severity from the preoperative period to five months after surgery and to evaluate for predictors of the occurrence and trajectories of these symptoms.

Methods. Patients completed the Memorial Symptom Assessment Scale before and at one and five months after surgery. Changes in the six most common physical symptoms and the most common psychological symptom were evaluated using multilevel growth mixture modeling. Age, gender, comorbidity, and receipt of adjuvant chemotherapy were included as covariates in the conditional models for symptom occurrence and severity.

Results. The total number of symptoms increased significantly from the preoperative to the one month assessment. At five months, the number of symptoms was lower than at one month but significantly higher than at the preoperative assessment. The occurrence of five of the symptoms (i.e., pain, lack of energy, shortness of breath, feeling drowsy, and worrying) increased significantly from before through the first month after surgery and then decreased over time. Cough and difficulty sleeping persisted over the five months of the study. In general, the effect of the four covariates was to increase patients' overall symptom burden.

Conclusion. Changes in the occurrence and severity of these seven symptoms were variable. All seven symptoms occurred at relatively high rates and were of moderate severity. Findings can be used to identify patients who are at higher risk for more severe symptoms. J Pain Symptom Manage 2015;49:995–1015.

Key Words

Lung cancer, surgery, symptoms, preoperative, postoperative, predictors

Introduction

Studies have found that patients with lung cancer may report up to 27 symptoms, and they experience higher symptom distress than other cancer patients.[1–6] However, most of these studies characterized the symptom experience of heterogeneous samples of lung cancer patients[1–3] or those with advanced disease.[1,4–6]

Survival rates for patients with early-stage lung cancer have improved over the past 25 years in both the U.S. and Europe because of reductions in smoking, improved surgical management, and use of adjuvant chemotherapy (CTX).[7–9] Adjuvant CTX is recommended after surgery for patients with more advanced disease.[10] However, a patient's age is often considered

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when making a decision to use adjuvant CTX. Recent studies found that patients who were aged 65 years or older benefited from CTX,[8,11] but in those aged older than 80 years, no additional survival benefit was realized.[11] The CTX is usually started four to six weeks after surgery.[12]

Previous studies on the postoperative experience of lung cancer patients focused on changes in their quality of life (QOL).[2,13–23] Compared with the general population, lung cancer patients have a poorer QOL before surgery.[15,17] One month after surgery, their QOL is worse than preoperative ratings.[2,19,20,23] Findings regarding QOL scores in subsequent months are inconsistent. Although some studies found that patients' QOL scores returned to presurgical levels at three to six months after surgery,[14,20,23,24] others reported that ratings of QOL remained impaired for up to two years after surgery.[18,19]

Limited information is available on patients' symptoms and predictors of symptom occurrence and severity after lung cancer surgery. Knowledge of symptoms is important because the co-occurrence of multiple symptoms is associated with significant decreases in functional status and QOL.[25]To our knowledge, only one study evaluated the severity and predictors of six symptoms at one and four months after lung cancer surgery.[26] At the one month assessment, the three most severe symptoms were fatigue, loss of appetite, and shortness of breath (SOB).[26] At four months, fatigue, SOB, and cough were the most severe symptoms. Being male, younger age, a higher number of comorbid conditions, receipt of adjuvant treatment, and a higher depression score were associated with more severe symptoms at the four month assessment.[26]

In a recent study, our research team reported that patients experienced an average of 10 symptoms before lung cancer surgery[27] and an average of 13 symptoms one month after surgery.[28] Given the importance of providing patients with information on changes in symptoms after lung cancer surgery and the paucity of research in this area, the purposes of this study were to extend our previous findings and evaluate for changes in symptom occurrence and severity from the preoperative period to five months after surgery and to evaluate for predictors of symptom occurrence and severity for seven of the most common symptoms.

Methods

Patients and Settings

This study is part of a longitudinal study of symptoms in lung cancer patients who were eligible for surgery.[27,28] Patients were included if they were aged 18 years or older; were able to read, write, and understand Norwegian; and were scheduled for surgery for primary lung cancer. Patients were excluded if they were cognitively impaired; their surgery was canceled, surgery was exploratory, or if the histological examination after surgery revealed that the patients had benign or metastatic disease. Patients were recruited from three university hospitals in Norway (i.e., Oslo University Hospital in Oslo, St. Olav University Hospital in Trondheim, and Haukeland University Hospital in Bergen). The study was approved by the Regional Ethical Review Committee and supported by the Institutional Review Boards (Personvernombudet) at the hospitals involved in the study.

Instruments

Demographic and Clinical Characteristics. Patients provided information on marital status, living situation, level of education, and employment status. Research nurses collected information from the medical record on age, gender, smoking status, lung function, height, weight, and use of preoperative medications. After surgery, the patients' medical records were reviewed for information on stage of disease and type of surgery.

Self-Administered Comorbidity Questionnaire-19. The Self-Administered Comorbidity Questionnaire-19 (SCQ-19) includes 16 common comorbidities and three optional conditions. Patients were asked to indicate whether or not they had the comorbid condition, if they received treatment for it, and if it limited their activities. The total SCQ-19 score can range from zero to 57. A higher total score indicates a more severe comorbidity profile. The SCQ-19 has well-established validity and reliability in patients with chronic conditions[29,30] and was used to assess comorbidity in Norwegian oncology patients.[27,31]

Memorial Symptom Assessment Scale (MSAS). The Memorial Symptom Assessment Scale (MSAS) was developed to evaluate multiple dimensions of the symptom experience in oncology patients.[32] The scale contains a list of 32 physical and psychological symptoms. Patients were asked to indicate whether or not they had the symptom during the past week (i.e., symptom occurrence). If they experienced the symptom, they were asked to rate its severity using a four-point Likert scale (i.e., 1 = slight, 2 = moderate, 3 = severe, and 4 = very severe). The validity and reliability of the MSAS are well established.[32] The MSAS was used in a previous study to evaluate symptoms in Norwegian oncology patients.[31] Patients completed the MSAS preoperatively and again at one and five months after surgery.