

# Dyspnea

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Dyspnea, defined as a sensation of uncomfortable awareness of breathing, is one of the most frightening, distressing, and common symptoms experienced by patients with cancer. Dyspnea has many causes; however, fast, safe, and effective relief of the symptom is possible. Symptomatic management of dyspnea can be started concurrently with treatment directed at removing its underlying causes.

## Case Study

M.L., a 79-year-old woman who grew up in a coal-mining town in Pennsylvania, started smoking at age 10. After graduating from high school, she worked as a secretary in an auto body shop. She was widowed in 1992, and had a son and two grandchildren. She lived alone, with her supportive family living nearby. She had concurrent diagnoses of advanced chronic obstructive pulmonary disease (COPD) and emphysema as well as diverticulosis.

M.L. presented to the emergency room in February 2002 with complaints of dyspnea and cough. On system review, a weight loss of 40 pounds in the past month was noted. Her oxygen saturation was 80% on pulse oximetry, and she was anemic, with a hemoglobin of 8.2 gm/dl. A chest x-ray and computed tomography (CT) scan of the chest revealed a left upper lobe mass with lymphangitic spread. Subsequent biopsy was positive for adenocarcinoma of the lung. A metastatic work-up was negative. Surgery was not an option because her tumor was believed to be unresectable, and she was a poor surgical candidate because of her underlying lung disease. The recommended treatment plan was radiation therapy to the left lung and mediastinum. She was started on oxygen and continued to use the bronchodilators that had been prescribed for her chronic lung disease.

M.L. tolerated her radiation therapy without significant side effects and did well until January 2003, when her dyspnea and cough worsened. A CT scan revealed progressive lymphangitic spread of lung cancer, and she was started on a clinical trial with Iressa® (AstraZeneca Pharmaceuticals LP, Wilmington, DE). She tolerated treatment well and her symptoms were well controlled until October 2005, when she was diagnosed with hepatic metastases. She was treated with Tarceva® (Genentech Inc., South San Francisco, CA) and Alimta® (Eli Lilly and Company, Indianapolis, IN); however, her disease progressed, and she presented with worsening dyspnea in December 2005. The staff noted that her dyspnea was worsened by slight activity as well as anxiety. As her disease progressed, her anxiety increased and her dyspnea worsened.

## Overview

The term *dyspnea* is derived from the Greek *dys*, meaning bad or difficult, and *pneo*, meaning breathing. Dyspnea is a subjective experience; in other words,

descriptions of the symptom, including intensity and episodes, vary according to patient. Dyspnea usually occurs in patients with primary or secondary lung tumors but also is common in patients with no direct lung involvement (Pan, 2003). The pathophysiology of dyspnea is not well understood (Tanaka, Akechi, Okuyama, Nishiwaki, & Uchitomi, 2002). Dyspnea occurs when the required workload exceeds an individual's normal ventilation abilities. When this happens, neural receptors in the upper respiratory tract, lungs, and chest wall alert the respiratory centers of the brain stem in response to the changing levels of oxygen and carbon dioxide (McDermott, 2000).

Dyspnea may occur at rest or with exertion. Patients may describe dyspnea as shortness of breath, a smothering feeling, tightness in the chest, inability to get enough air, or a feeling of suffocation. When it occurs, patients usually reduce activity or increase breathing in an attempt to reduce the symptom. As many as 50% of patients with cancer experience dyspnea (Dudgeon, Lertzman, & Askew, 2001; Prommer & Casciato, 2004; Ratkin

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