The Patient With Cancer-Related Dyspnea

Case Studies [1] | April 06, 2009
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The patient, "JD," is a 62-year-old Caucasian female who had stage IV non–small cell lung cancer (NSCLC) diagnosed 3 months ago. Her medical history is significant for chronic obstructive pulmonary disease (COPD). She quit smoking cigarettes more than 6 months ago after having smoked a pack per day for 40 years.

Currently she is being treated with systemic chemotherapy. In addition to the dyspnea, she reports occasional dry cough, increasing fatigue, and anorexia. She denies anxiety or depression but admits to feeling panic during "difficult breathing" episodes. Ms. D's current medications include an antinausea regimen, sustained-release morphine sulfate at a dosage of 30 mg every 12 hours, prescribed for posterior thorax pain, and two puffs of albuterol / ipratropium metered dose inhaler four times a day.

Ms. D returns to the cancer center for her second cycle of chemotherapy. Her vital signs include oral temperature 97.8º F, regular heart rate but tachycardia at 116 beats/min, shallow respiration rate of 28 breaths/min, blood pressure of 128/77 mmHg and a 3-pound weight loss since the first chemotherapy treatment. She denies pain, nausea/vomiting, constipation/diarrhea, or numbness/tingling of the extremities. She rated her fatigue at a level of 8 (on a Numerical Rating Scale [NRS] of 0 to 10, with 10 being the worst fatigue).
She reports a dyspnea rating of 7 also on a 0–10 NRS. This is an increase from her previous dyspnea score of 4. Her oxygen percent saturation at rest on room air is 94%; it desaturated to 88% with exertion, also on room air. The nurse assesses Ms. D’s lung sounds and notes in general that her breath sounds are distant bilaterally and that there are absent breath sounds one-third of the way up from the base of the left lower lung field.

Ms. D appears anxious and distressed, and she expresses fear that her cancer is growing. A chest X ray was obtained which showed that the patient had a new left pleural effusion.

**NURSING MANAGEMENT**

An ultrasound-guided thoracentesis was arranged to drain the pleural fluid. Almost 1 liter of pleural fluid was removed, which significantly improved Ms. D’s breathing. Unfortunately the fluid rapidly reaccumulated over a period of 1 week, and her dyspnea returned. The ambulatory care nurse arranged for the delivery of home portable oxygen and Ms. D was given a prescription for immediate-release morphine to relieve her dyspnea on an as-needed basis. Recognizing the reactive dimension of Ms. D’s dyspnea, the nurse explained to her that “dyspnea causes anxiety and anxiety causes more dyspnea; it is a vicious cycle.”[1] The nurse helped the patient to identify what causes her anxiety, which in turn may intensify her dyspnea.

Deep breathing and progressive muscle relaxation are simple relaxation techniques that do not require patients to physically exert themselves. Once the technique is mastered, it can be used as soon as the patient recognizes that her stress levels are up; at this point she can takes steps to
control and manage her anxiety level, which in turn may decrease the dyspnea. While arrangements were being made for a pleuradesis procedure, the nurse taught Ms. D the reasons for the procedure in a calm, quiet, nonhurried way. She also taught the patient other nondrug methods to help to reduce feelings of dyspnea, such as controlling one's environment and body position. Keeping the room cool and at a low level of humidity, or using a light cool breeze from a fan directed at the patient's face may help to reduce the sensation of dyspnea. Other helpful suggestions included sitting in a leaning-forward position with arm support or using pursed-lip breathing to help maximize lung expansion. Most patients learn about pacing activities with rest intervals (ie, eat first, rest, wash up, rest, etc.) but formalizing the process allows for more control.

OUTCOME
These measures were successful in keeping Ms. D's dyspnea under control for several weeks. Her disease did not respond to the systemic chemotherapy and she was referred to a hospice home care program. She maintained good symptom control until the last week of her life, when dyspnea again became a prominent symptom. A trial of nebulized morphine did not improve her breathing, as she was too weak to participate in the breathing treatment. Successive increases in the dose of immediate-release morphine were employed to palliate her dyspnea.

DISCUSSION
Dyspnea or breathlessness is one of the three most frequently reported symptoms by persons with lung cancer, who also rank it among the top three most severe symptoms.[2] The term 'dyspnea' is applied to sensations experienced by individuals who report unpleasant or difficult respiration. The American Thoracic Society defines it as "a subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity."[3] Many factors can cause or contribute to the symptom of dyspnea. It is not uncommon for a person with lung cancer to have, in addition to a primary lung tumor, other factors that contribute to dyspnea such as a pleural effusion, anemia, cachexia, and underlying COPD (chronic obstructive pulmonary disease).[4] Cognitive variables such as anxiety and depression[5] or personality[6] also have been shown to modify dyspnea.

Dyspnea assessment is a challenge because of the symptom's subjective nature. The most common method of assessment is self-report of the activity level that causes awareness of the symptom. Visual analog scales and numerical rating scales have been shown to be valid and reliable in assessing cancer-related dyspnea.[7] Basic diagnostic testing includes pulse oximetry at rest and with exertion, if feasible. A chest radiograph may be indicated to evaluate acute problems. An important goal of patient assessment is to differentiate between an acute and possibly reversible cause of dyspnea, such as the pleural effusion in Ms. D's case, and a condition that requires palliative or supportive interventions.

Symptomatic management of dyspnea is based on pharmacologic therapy and general supportive measures. Oxygen therapy often is employed to correct physiologic parameters but there is lack of evidence that it relieves the sensation of dyspnea.[8] As discussed, increased ambient airflow across the face or nasal mucosa such as that generated by oxygen flow or a fan may alter the perception of dyspnea through poorly understood mechanisms.[9]

PHARMACOLOGIC THERAPY
Strong evidence from a meta-analysis and smaller studies supports use of short-acting oral and parenteral opioids to treat dyspnea in patients with advanced disease.[10] Opioids have a respiratory depressive effect so that the intensity of respiratory sensation is reduced.[3] Morphine was the predominant opioid used in most studies, but evidence to support a specific dose recommendation is lacking. One study showed a supplemental opioid dose equal to 25% of a regular 4-hour opioid dose was as effective as 50% of the regular dose.[11] In general, opioid-tolerant patients reported dyspnea relief from supplemental opioid dosing. Currently there is no convincing evidence that nebulized opioids are effective in relieving dyspnea, although benefit is reported in some situations.[10,12] There is conflicting expert opinion regarding use of benzodiazepines; some experts recommend them to treat anxiety associated with dyspnea[13,14]; others claim that use of an anxiolytic is not supported for relief of cancer-related dyspnea.[9,15] In some patients, a trial of a benzodiazepine may be reasonable.

GENERAL SUPPORTIVE MEASURES
Persons with dyspnea usually find that positioning, decreasing energy expenditure, and relaxation strategies minimize the symptom. One multicenter randomized trial found patients with lung cancer who attended weekly sessions to receive specialized nursing interventions such as education about
breathing control, relaxation and distraction strategies, and emotional support reported decrease in
breathlessness and improved life quality compared with those who received usual care.[16] This
rehabilitative approach to cancer-related dyspnea needs confirmation with respect to which
intervention or which combination of the helpful nursing interventions is the most significant.
However, it is validating to know that detailed nursing care can yield a positive outcome in these
patients. Dyspnea is difficult patient symptom to manage. It evokes a response that begs
intervention from patients, caregivers, and health professionals. Conducting studies of persons
experiencing dyspnea is difficult owing to their unstable clinical status, but further research is
needed to find the most beneficial interventions to treat cancer-related dyspnea.

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