To Screen or Not to Screen: Using Spiral Computerized Tomography in the Early Detection of Lung Cancer

Ellen Giarelli, EdD, RN, CS, CRNP

Early-stage lung cancers are the most amenable to treatment. Historically, computerized tomography (CT) has been used to detect the presence of lung and other types of cancer. A new type of CT scanner, known as a spiral or helical scanner, can image the entire lung area in 20–30 seconds and produce three-dimensional images. Spiral CT scanning is noninvasive, rapid, and able to diagnose conditions with limited patient discomfort. Although some studies suggest that spiral CT scanners are able to detect potentially cancerous lung nodules at an early stage, their use as a mass screening method for lung cancer is not endorsed by many researchers or the Society of Thoracic Radiology. Studies are in progress to determine the most clinically effective, cost-effective, and efficient method for detecting early-stage lung cancer.

Imaging may be the first step in prevention of the spread of cancer through early detection. CT imaging, magnetic resonance imaging (MRI), mammography, ultrasound, positron emission testing (Grossman, Griffeth, & Hanson, 1999), x-ray imaging, and nuclear medicine imaging all are tools used in cancer detection. CT and MRI are good for imaging soft tissue structures and can be used to build precise computer models of affected tissue. Physicians and surgeons use the models to design surgical and radiation treatments. CT is the method of choice for imaging tumors of the lungs, abdomen, liver, kidneys, pancreas, and pelvis because it can acquire data rapidly and minimize artifacts in images caused by motion, breathing, or peristalsis. Newer spiral CT scanners may be “interventional CTs” that allow real-time imaging for the guidance of biopsy needles. Spiral scanners can image whole anatomic regions of the lungs in 20–30 seconds. Instead of a stack of individual slices, all data are obtained with the patient in one position. The data set can be reconstructed by computer to create a three-dimensional picture. Three-dimensional images provide detailed representations of lesions and normal tissue. Spiral CT scanning is noninvasive, rapid, and can diagnose conditions with limited patient discomfort. Multiple-slice spiral CT systems can collect up to four slices.