Editorial

Lung Cancer Screening

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Screening examinations are tests performed to find disease before symptoms begin. The goal of screening is to detect disease at its earliest and most treatable stage. In order to be widely accepted and recommended by medical practitioners, a screening program must meet a number of criteria, including reducing the number of deaths from the given disease.[1]

Screening tests may include laboratory tests to check blood and other fluids, genetic tests that look for inherited genetic markers linked to disease, and imaging tests. These tests are typically available to the general population; however, an individual's needs for a specific screening test are based on factors such as age, gender and family history. In lung cancer screening, individuals who have a high risk of developing lung cancer but no signs or symptoms of the disease undergo low-dose computed tomography (LDCT) scanning of the chest. LDCT produces images of sufficient quality to detect many abnormalities while using up to 90 percent less ionizing radiation than a conventional chest CT scan. In the past, two other tests have been used to check for lung cancer, chest x-ray and sputum cytology. The use of chest x-ray and sputum cytology, individually or in combination, has not resulted in a decreased risk of dying from lung cancer.[2,3]

Lung cancer is the leading cause of cancer deaths in the United States and worldwide. Approximately 85 percent of lung cancer deaths occur in current or former cigarette smokers. The most common type is non-small cell lung cancer. Lung cancer that is detected early, before spreading to other areas of the body is more often successfully treated. Unfortunately, when lung cancer is diagnosed, occasionally the disease has already spread outside the lung.Risk factors for lung cancer include tobacco smoking, exposure to radon, asbestos or other cancer-causing agents, personal or family history of lung cancer and certain chronic lung diseases like- COPD, pulmonary fibrosis.[1,3,4]

Current recommendations for lung cancer screening followed publication of a large, randomized clinical trial sponsored by the National Cancer Institute called the National Lung Screening Trial (NLST).[5] The NLST was performed to determine whether screening low-dose chest CT exams could reduce death rates from lung cancer among those at high risk for the disease. The trial studied more than 53,000 men and women aged 55 to 74 who were current or former heavy smokers at 33 sites across the United States. Each participant was randomly assigned to receive screenings with either low dose CT (LDCT) or standard chest X-ray once per year for three consecutive years. The trial demonstrated 15 to 20 percent fewer lung cancer deaths among the trial participants screened with LDCT. The American Cancer Society recommends annual lung cancer screening with a low-dose CT scan (LDCT) for certain people at higher risk for lung cancer who meet the conditions like age of the patient is between 55 to 80 years, in fairly good health, currently smoking or have quit within the past 15 years, having at least a 30-pack-year smoking history, cessation of smoking counseling if they are current smokers, have been involved in informed/shared decision making about the benefits, limitations, and harms of screening with LDCT scans and have access to a high-volume, high quality lung cancer screening and treatment center.[2,4,6]

Benefits of LDCT are the ability to detect even very small nodules in the lungs, LDCT of the chest is especially effective for diagnosing lung cancer at its earliest, most treatable stage.CT is fast, which is important for patients who have trouble holding their breath. CT scanning is painless and noninvasive. No contrast material is required for LDCT. No radiation remains in a patient's body after a CT examination. X-rays used in LDCT of the chest have no immediate side effects and do not affect any metal parts in body such as pacemakers or artificial joints. Low-dose CT scans of the chest produce images of sufficient image quality to detect many abnormalities using up to 90 percent less ionizing radiation than a conventional chest CT scan. Lung cancer screening with LDCT has been proven to reduce the number of deaths from lung cancer in patients at high risk. When cancer is found with screening, it is often at an early stage and patients can more often undergo minimally invasive surgery and have less lung tissue removed.[1,6,7]

Risks of LDCT are false positive results may occur when a test appears to be abnormal but no lung cancer is found. Abnormal findings require additional testing to determine whether or not cancer is present. These tests, such as additional CT exams or more invasive tests in which a piece of lung tissue is removed (called a lung biopsy), have risks and may cause a patient anxiety. Test results that appear to be normal even when lung cancer is present are called false-negative results. A person who receives a false-negative test result may delay seeking medical care.Not all of the cancers detected by LDCT will be found in the early stage of the disease. Screening that detects lung cancer may not improve health or help to live longer if the disease has already spread beyond the lungs to other areas of the body. LDCT lung cancer screening and all other screening exams can lead to the detection and treatment of cancer which may never have harmed you. This can result in unnecessary treatment, complications, and cost. There is a theoretical small risk of cancer from exposure to low dose radiation.[7]

As lung cancer typically occurs in the form of a lung nodule, an area of abnormal tissue within the lung. The vast majority (greater than 95%) of these nodules do not represent cancer but instead represent areas of scarring in the lung from prior infection or small lymph nodes. If LDCT scan detects a nodule larger than a certain size, it will recommended a follow-up LDCT scan several months later to check that the nodule does not change in size.In the event the nodule grows or is suspicious, may recommend further evaluation with a more advanced imaging study such as a contrast-enhanced CT and/or lung biopsy. A pathologist can analyze the cells from the biopsy todetermine whether the nodule is malignant or benign. If the nodule is cancerous, additional blood and imaging tests may be recommended to determine the stage of the tumor. The imaging tests usually include additional computed tomography (CT) scanning of the body and may include a bone scan or a PET/CT scan. The treatment options and expected results of treatment depend on the stage of the tumor. The Task Force recommends that yearly lung cancer screening stop when the person being screened turns 81 years old, has not smoked in 15 or more years and develops a health problem that makes him or her unwilling or unable to have surgery if lung cancer is found.[2,4,7]

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