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NEWS

RSNA Press Release

CT Helps Radiologists Detect Lung Cancer Earlier

Released: February 25, 2003

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OAK BROOK, Ill. - Computed tomography (CT) allows radiologists to detect lung cancer in earlier stages than chest radiography (x-ray) but yields a high number of false positive findings, according to a study appearing in the March issue of the journal *Radiology*.

"CT lung cancer screening may be part of the solution for this major killer," said Stephen J. Swensen, M.D., lead author of the Mayo Clinic study. He urges caution, however, because CT lung screening involves risks and is yet unproven at saving lives.

According to the American Cancer Society (ACS), lung cancer is the leading cause of cancer death among both men and women in the United States with an estimated 157,200 deaths expected this year. The ACS reports that in 2003 lung cancer will account for 13 percent of all new cancers with 171,900 new cases diagnosed.

The ACS also reports that the five-year survival rate for all stages of non-small cell lung cancer (NSCLC) combined is 15 percent. For small cell lung cancer, the five-year survival rate is 6 percent. If NSCLC is found and surgically treated before it has spread beyond the lung, the five-year survival rate increases to 50 percent. However, only 15 percent of lung cancer patients are diagnosed before their cancer has spread.

The Mayo study found that CT screening of high-risk patients detects lung cancer at a smaller size and earlier stage as compared with chest radiography and other clinical practice diagnostics. However, CT screening also identifies many benign, uncalcified lung nodules as false positive findings.

The researchers used low-dose, spiral chest CT to screen 1,520 people age 50 and older who were at high risk for lung cancer. They analyzed lung characteristics, nodules and additional findings and compared the results with previous chest radiograph-based studies and current clinical practice diagnosis.

The study reported that 1,049 of the 1,520 people screened (69 percent) had uncalcified lung nodules. Using CT, researchers detected 38 cases of lung cancer, including 35 cases of NSCLC. The mean size of the CT-detected, non-small cell cancers was 15 millimeters. Sixty percent of the 35 non-small cell cancers detected using CT were stage IA, the most

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curable stage.

"We know that for some cancers early detection saves lives, but it is yet unproven for lung cancer," said Dr. Swensen, professor and chair of the Department of Radiology at Mayo Clinic in Rochester, Minn. "It is possible that lung cancer has already spread before it can be detected with CT. In that scenario, we may actually be doing more harm than good to patients by removing tumors and involving patients in major surgery that has a measurable mortality rate."

The study reported that, over three years, 98 percent of uncalcified lung nodules detected by CT represented false positive findings. In such cases, further testing was required to determine if the imaging findings were lung cancer or benign nodules. Additional testing often includes surgery.

"Approximately half of patients who go to surgery in the U.S. with a suspicious lung nodule receive a benign diagnosis. Surgery costs between $20,000 and $30,000 and carries with it a 2 percent to 4 percent mortality rate," Dr. Swensen said.

Dr. Swensen recommends that people at high risk for lung cancer who are interested in screening should check to see if they are eligible for the National Lung Screening Trial (NLST), which is sponsored by the National Cancer Institute. If participating in the trial is not an option, then he encourages people at high risk to talk to their personal physician about the pros and cons of a screening chest CT or chest radiograph.

"Our research offers more support for the need to do a large, randomized, control trial to evaluate if chest CT can reduce the number of lung cancer deaths in America. We also need to further investigate the issues of false positive findings, overdiagnosis, quality of life, complications (including death) and the expense of unnecessary surgical procedures," Dr. Swensen said.

"If CT screening is shown to be worthwhile and cost effective, it could completely change the way diagnostic radiologists interact with patients. Instead of a physical exam, the initial exam in selective situations may be a screening exam with CT," Dr. Swensen concluded.

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Radiology is a monthly scientific journal devoted to clinical radiology and allied sciences. The journal is edited by Anthony V. Proto, M.D., School of Medicine, Virginia Commonwealth University, Richmond, Virginia. *Radiology* is owned and published by the Radiological Society of North America Inc. (http://radiology.rsna.org)

The Radiological Society of North America (RSNA) is an association of more than 33,000 radiologists, radiation oncologists and physicists in medicine dedicated to education and research in the science of radiology. The Society's headquarters are located at 820 Jorie Boulevard, Oak Brook, Ill. 60523-2251. (http://www.rsna.org)

"Lung Cancer Screening with CT: Mayo Clinic Experience." Collaborating with Dr. Swensen on this study were James R. Jett, M.D., Thomas E. Hartman, M.D., David E. Midthun, M.D., Jeff A. Sloan, Ph.D., Anne-Marie Sykes, M.D., Gregory L. Aughenbaugh, M.D., and Medy Clemens, C.C.R.P., from the Mayo Clinic in Rochester, Minn.

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