
RSNA Press Release

New Study Looks at Growth Rates of Lung Cancers Found by CT Screening

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OAK BROOK, Ill. — Growth rates of lung cancers found by annual rounds of computed tomography (CT) screening are important for determining the usefulness and frequency of screening, as well as for determining the treatment. According to the latest report from the International Early Lung Cancer Action Program (I-ELCAP) published online in the journal *Radiology*, lung cancers diagnosed in annual repeat rounds of CT screening are similar—both in volume doubling time and cell-type distribution—to those found in clinical practice.

"There was concern that cancers diagnosed in the screening context were somehow different than cancers found in routine practice, that they were not aggressive," said I-ELCAP principal investigator Claudia I. Henschke, Ph.D., M.D., professor of radiology at Mount Sinai School of Medicine in New York, N.Y. "We demonstrate here that they are quite similar."

The researchers reported that growth rates found in cancers detected in repeat rounds of annual CT screening are not significantly different from growth rates reported for cancers diagnosed in clinical practice in the absence of screening. Also, the frequencies of small-cell carcinoma and adenocarcinoma among all lung cancers have been reported to be approximately 20 percent and 50 percent, respectively, in the absence of screening. In repeat rounds of CT screening, these frequencies were nearly identical (19 percent and 50 percent).

Lung cancer is the leading cause of cancer death among men and women. The American Cancer Society estimates that in 2012, approximately 226,160 new cases of lung cancer will

At A Glance

- Lung cancers found through annual CT screening grow at a similar rate to those found in clinical practice.
- Sub-solid nodule cancers had significantly longer volume doubling times than solid nodule cancers.
- Lung cancer is the leading cause of cancer death.



*Claudia I. Henschke,
Ph.D., M.D.*

be diagnosed in the U.S. and 160,340 Americans will die from the disease.

CT screening has been found effective in detecting lung cancer at its earliest, most curable stage.

"This study shows that the cell types of cancer diagnosed in annual rounds of screening, as well as their growth rates, are quite similar to those that are found in clinical practice where it is well understood that lung cancer is highly lethal," Dr. Henschke said. The first, or baseline, round of screening for any cancer detects a higher proportion of slower-growing cancers than those detected in clinical practice, she noted. The subsequent, repeat rounds of screening, however, reflect what is found in clinical practice.

The study found that there is a difference in the growth rates of cancers in solid and sub-solid lesions and that the sub-solid ones tend to be less aggressive than solid ones.

"This suggests that a less aggressive approach is indicated for both diagnosis and treatment of sub-solid lesions," Dr. Henschke said.

The researchers reviewed results from the I-ELCAP database for 1993 to 2009, consisting of men and women at risk for lung cancer who underwent annual repeat rounds of CT screening. The research team identified 111 instances of first primary lung cancer diagnosed either through screening or between rounds after a negative result of the prior screening seven to 18 months earlier. Of the 111 cancers identified, 88 were clinical Stage I. The investigators then analyzed volume doubling time and cell-type distribution.

The results showed that the median volume doubling time was 98 days. Most of the cancers, 99 of the 111, manifested as solid nodules, while only 12 of the cancers manifested as sub-solid nodules. Solid nodule cancers had significantly faster volume doubling times than sub-solid nodule cancers. According to Dr. Henschke, identifying the volume doubling times for specific lesion types may lead to more tailored treatment for the patient.

Volume doubling times for lung cancers diagnosed in clinical practice in the absence of screening have been reported to range from 20 to 360 days. A recent study, based on a systematic medical literature review, reported a mean volume doubling time of 135 days for non-small-cell lung cancers diagnosed in the absence of screening.

Dr. Henschke recommends that people at high risk for lung cancer have a discussion with their health care provider to discuss the benefits and risks of screening so as to make an informed decision about enrolling in a screening program.

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"Lung Cancers Diagnosed by Annual CT Screening: Volume Doubling Times." Collaborating with Dr. Henschke were David F. Yankelevitz, M.D., Rowena Yip, M.P.H., Anthony P. Reeves, Ph.D., Ali Farooqi, M.D., Dongming Xu, M.D., James P. Smith, M.D., Daniel M. Libby, M.D., Mark W. Pasmantier, M.D., and Olli S. Miettinen, M.D., Ph.D., as the writing committee for the I-ELCAP Investigators.

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