CT scans for lung cancer screening may be beneficial in detecting COPD

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Among men who were current or former heavy smokers, undergoing lung cancer screening with computed tomography (CT) scanning identified a substantial proportion who had chronic obstructive pulmonary disease (COPD), suggesting that this method may be helpful as an additional tool in detecting COPD, according to a study in the October 26 issue of *JAMA*.

"Smoking is annually projected to cause more than 8 million deaths worldwide in the coming decades. Besides cardiovascular disease and cancer, chronic obstructive pulmonary disease is a major cause of death in heavy smokers. Nevertheless, COPD is substantially underdiagnosed. Despite a decrease in cardiovascular mortality and stabilization of cancer mortality worldwide, mortality from COPD is increasing," according to background information in the article. Early cessation of smoking can prevent COPD progression, underscoring the importance of early detection. Computed tomography-based lung cancer screening may provide an opportunity to detect individuals with COPD at an early stage.

Onno M. Mets, M.D., of the University Medical Center Utrecht, the Netherlands, and colleagues conducted a study to examine whether low-dose lung cancer screening CT scans could be used to identify participants with COPD. The study, conducted within an ongoing lung cancer screening trial, included prebronchodilator pulmonary function testing with inspiratory (inhalation of air into the lungs) and expiratory (exhalation of air from the lungs) CT scans performed on the same day

from 1,140 male participants between July 2007 and September 2008. The pulmonary function tests were used as the reference standard in determining the COPD diagnostic accuracy of the CT scans.

The average age of participants was 62.5 years. Data for self-reported respiratory symptoms were available from 1,085 participants; a total of 566 participants were symptomatic, and 519 participants were asymptomatic. Forty-one participants (3.6 percent) reported physician-diagnosed emphysema and 93 (8.2 percent), bronchitis. Based on the results of pulmonary function testing, 437 participants (38 percent) were classified as having COPD.

The final diagnostic model for the study included 5 factors independently associated with obstructive pulmonary disease: CT emphysema, CT air trapping (an abnormal retention of air in the lungs), body mass index, pack-years (the number of packs of cigarettes smoked per day multiplied by the number of years the person has smoked), and smoking status. Using the point of optimal accuracy, the model identified 274 participants with COPD with 85 false-positives, a sensitivity of 63 percent, a specificity of 88 percent, and a positive predictive value of 76 percent, which corresponds to 63 percent (274 of 437) of all participants with COPD. These 274 participants comprised 54 percent (150 of 277) of all participants with mild obstruction, 73 percent (99 of 135) of all participants with moderate obstruction, and 100 percent (25 of 25) of all participants with severe obstruction.

"Our study findings suggest several practical considerations. If the results of this study are validated and confirmed and are found to be generalizable, it may be reasonable to consider adding an expiratory CT scan to the (baseline) inspiratory CT scan for additional evaluation of COPD because this would improve diagnostic accuracy. Although an additional ultralow-dose expiration CT scan increases the radiation dose, this exposure is limited. The additional scan can be obtained within the 5

minutes needed for lung cancer screening, so a substantial amount of extra scan time is not required," the authors write.

The researchers add that this possible strategy of using quantitative CT for detection of airflow limitation is not proposed as a primary screening method for COPD, for which pulmonary function testing is the preferred method. "A screening test should have a high sensitivity to identify most of the participants with unsuspected disease, and the performance of our strategy at optimal accuracy is not sufficient for CT to serve as a COPD screening test."

More information: *JAMA*. 2011;306[16]:1775-1781.

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