EDITORIAL

Emphysema and lung cancer screening

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by Wachuła et al, see p. 17

Lung cancer is the leading cause of cancer-related mortality worldwide.[1,2] In Poland, where Wachuła et al[3] conducted their study, lung cancer is responsible for over 31% and 16% of cancer deaths in men and women, respectively,[4] and a program for the detection of early lung cancer will shortly be introduced.[5]

The U.S. Preventive Services Task Force recommends (grade B) annual screening in adults aged 55 to 80 years who have a smoking history of 30 pack-years and are current smokers or have given up smoking within the past 15 years. However, concerns have been raised about limiting screening selection criteria to age and smoking habit, because lung cancer could be missed in individuals who are younger, are lighter smokers, or both (particularly women).[6] A previous study showed that factors associated with solitary pulmonary nodule (SPN) malignancy and 5-year lung cancer mortality were different for men and women, especially smoking history, where a relatively high rate of lung cancer diagnosis was found in women classified as nonsmokers.[7]

The National Lung Screening Trial revealed that the presence of emphysema was clearly associated with an increased risk of death from lung cancer (hazard ratio, 1.56; 95% CI, 1.20–2.04). The Brock model, developed from the data set of the Pan-Canadian Early Detection of Lung Cancer Study (PanCan) conducted by the British Columbia Cancer Agency (1871 persons with 7008 SPNs) and validated in a clinical population,[8] includes emphysema in its management algorithms for suspicious SPN, along with older age, female sex, family history of lung cancer, and nodule characteristics (larger nodule size, location of the nodule in the upper lobe, part-solid nodule type, lower number of nodules, and spiculated borders). This model is recommended by the British Thoracic Society.[9]

It is likely, therefore, that the use of emphysema as a screening criterion would provide an additional means of identifying at-risk individuals who might benefit from screening. Wachuła et al[3] analyzed the relationship between emphysema and SPN characteristics in order to consider emphysema as an inclusion criterion in lung cancer screening (along with age and tobacco consumption). They used data from the Pilot Silesian study for Early Lung Cancer Detection using low-dose computed tomography and included 601 asymptomatic volunteers with a smoking history. This study revealed an association between emphysema and those SPN characteristics which previous evidence had shown to be related with SPN malignancy in a high-risk population.[3] Emphysema was closely correlated with risk factors for lung cancer, such as qualitative and quantitative SPN characteristics related to malignancy (morphology, size, and localization) and patient characteristics such as age and heavy smoking.

However, Wachuła et al[3] did not evaluate an association between emphysema and SPN malignancy as this was not their aim. In addition, the small size of the study group and limitations to the radiologists' interpretation would have made this difficult. Nonetheless, the authors did establish a relationship between SPNs and emphysema, which highlights the relevance of including the presence of emphysema as a new inclusion criterion for screening. In addition, these results question the inclusion of only current age and tobacco exposure as screening criteria. In fact, 80% of screened patients with lung cancer had previously suffered from chronic obstructive pulmonary disease, emphysema, or both.[10]

Experts have called for the modification of inclusion criteria in lung cancer screening studies to include all high-risk individuals, particularly because of the increasing incidence of lung cancer in nonsmokers. This particularly benefits women, given the high incidence of lung cancer in never-smoking women,[11,12] and those populations who have been exposed to lung carcinogens such as asbestos or air pollution (223 000 lung cancer deaths annually could be attributed to particulate matter less than 2.5 μm in aerodynamic diameter).[13] However, further prospective studies are needed to clarify the utility of including emphysema as a new criterion in a lung cancer screening program.

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