See Article page 824.

Commentary: The role of low-dose computed tomography for lung cancer screening among the nonsmoking Asian population

I-Hsien Lee, MD, and Chung-Yu Chen, MD, PhD

I-Hsien Lee, MD (*left*), and Chung-Yu Chen, MD, PhD (*right*) worked together for this commentary.

CENTRAL MESSAGE

The necessity and efficacy of low-dose computed tomography screening for lung cancer, and also the risk prediction model, should be verified in Asian never-smokers.

Currently, lung cancer screening using low-dose computed tomography (LDCT) is recommended for heavy smokers in North America, Europe, and some countries in Asia. Both the NSLT and NELSON trials revealed a significant reduction of lung cancer mortality in the high-risk group. The incidence of lung cancer reported by the NSLT was 645 cases per 100,000 person-years (1060 cancers) in the LDCT group[1] and 8.9 detected cancers per 1000 screened in the NELSON trial.[2] The previous 2 large cohorts enrolled patients with high lung cancer risk, including smoking history and age, but the percentage of the Asian population was less than 5%. Zhang and colleagues[3] demonstrated that the lung cancer detection rate was as high as 2%, surprisingly in both female and nonsmoking employees. Evidence has shown that the incidence of lung cancer among never-smokers is increasing.[4-7] It is estimated that 10% to 25% of lung cancer occurs in never-smokers, and the prevalence is relatively high in East Asian women.[8] The NSLT and NELSON trials demonstrated the effectiveness of LDCT screening in smokers, but the effectiveness of LDCT screening among never-smokers is unknown. Recently, the TALENT study in Taiwan enrolled more than 10,397 participants who were nonsmokers, mainly female, with at least 1 potential lung cancer risk, including environmental exposure, tuberculosis/chronic obstructive pulmonary disease, cooking, and family history. The lung cancer detection rate in this population was 2.42% (data not published yet). These findings again remind us of that the different risk factors of lung cancer between the Asian and the Western populations. Therefore, the risk prediction model generated from the studies of Western countries may not be suitable to be directly adapted to the Asian population. The necessity and efficacy of LDCT screening in Asian never-smokers should be verified in the future.

The second implicating finding is that 96% of detected lung cancer on LDCT presented as ground-glass opacities (GGOs),[3] which was not described in previous studies. Only 9.7% of participants in the NSLT presented with subsolid nodules.[9] The histologic types of lung cancer detected by LDCT in this study were mainly adenocarcinoma (99%) at early stage (95% before stage Ib), more as adenocarcinoma in situ (26%) and minimally invasive adenocarcinoma (37%), less as invasive adenocarcinoma (36%).[3] Based on previous studies, these patients have 5-year disease-free survival rates of 100% if these nonsolid nodules are completely resected.[10] Data suggest that many nonsolid nodules can resolve, although they need to be followed.[9,11] When assessing subsequent LDCT scans, the most important radiologic factor is change or stability of nodules compared with a previous imaging study.[12] Zhang and colleagues[3] did not provide a clear definition of a positive finding and did not regulate the follow-up strategy of the incidentally found GGOs to tell the natural course of the GGOs lesion but only based on principle. The definition of a positive finding of lung nodules is important to decrease false-positive rates and to limit unnecessary invasive procedures. This study reported that they repeat computed tomography scan after 3 to 4 months for the GGO nodules, which is reasonable based on current guideline.[12,13]

Zhang and colleagues[3] also reported part of their surgical intervention and excellent long-term prognosis but did not

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provide the data. The current guideline suggests standard lobectomy with mediastinal lymph node dissection for early-stage lung cancer.[14] Whether wedge resection, segmentectomy with/without mediastinal lymph node sampling, with/without intraoperation frozen examination should be performed falls in another issue. We agree that standard lobectomy with mediastinal lymph node dissection might be overtreatment for these patients with early-detected, benign histologic lung cancer, but more evidence is needed to standardize the surgical technique.

References

1. Aberle DR, Adams AM, Berg CD, Black WC, Clapp JD, Fagerstrom RM, et al. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N Engl J Med*. 2011;365:395-409.
2. Horeweg N, Scholten ET, de Jong PA, van der Aalst CM, Weenink C, Lammers JW, et al. Detection of lung cancer through low-dose CT screening (NELSON): a prespecified analysis of screening test performance and interval cancers. *Lancet Oncol*. 2014;15:1342-50.
3. Zhang Y, Jheon S, Li H, Zhang H, Xie Y, Qian B, et al. Results of low-dose computed tomography as a regular health examination among Chinese hospital employees. *J Thorac Cardiovasc Surg*. 2020;160:824-31.e4.
4. Toh CK, Ong WS, Lim WT, Tan DS, Ng QS, Kanesvaran R, et al. A decade of never-smokers among lung cancer patients—increasing trend and improved survival. *Clin Lung Cancer*. 2018;19:e539-50.
5. Kawaguchi T, Matsumura A, Fukai S, Tamura A, Saito R, Zell JA, et al. Japanese ethnicity compared with Caucasian ethnicity and never-smoking status are independent favorable prognostic factors for overall survival in non-small cell lung cancer: a collaborative epidemiologic study of the National hospital organization study group for lung cancer (NHSGLC) in Japan and a Southern California regional cancer registry databases. *J Thorac Oncol*. 2010;5:1001-10.
6. Cufari ME, Proli C, De Sousa P, Raubenheimer H, Al Sahaf M, Chavan H, et al. Increasing frequency of non-smoking lung cancer: presentation of patients with early disease to a tertiary institution in the UK. *Eur J Cancer*. 2017;84:55-9.
7. Pelosof L, Ahn C, Gao A, Horn L, Madrigales A, Cox J, et al. Proportion of never-smoker non–small cell lung cancer patients at three diverse institutions. *J Natl Cancer Inst*. 2017;109(7).
8. Emery JD, Mitchell PL. Lung cancer in Asian women and health system implications for Australia. *Lancet Oncol*. 2017;18:1570-1.
9. Yip R, Yankelevitz DF, Hu M, Li K, Xu DM, Jirapatnakul A, et al. Lung cancer deaths in the National Lung Screening trial attributed to nonsolid nodules. *Radiology*. 2016;281:589-96.
10. Naidich DP, Bankier AA, MacMahon H, Schaefer-Prokop CM, Pistolesi M, Goo JM, et al. Recommendations for the management of subsolid pulmonary nodules detected at CT: a statement from the Fleischner Society. *Radiology*. 2013;266:304-17.
11. Marshall HM, Bowman RV, Yang IA, Fong KM, Berg CD. Screening for lung cancer with low-dose computed tomography: a review of current status. *J Thorac Dis*. 2013;5(suppl 5):S524-39.
12. Wood DE, Kazerooni EA, Baum SL, Eapen GA, Ettinger DS, Hou L, et al. Lung Cancer Screening, Version 3.2018, NCCN clinical practice guidelines in oncology. *J Natl Compr Canc Netw*. 2018;16:412-41.
13. Zhou Q, Fan Y, Wang Y, Qiao Y, Wang G, Huang Y, et al. China National Lung Cancer Screening Guideline with Low-dose Computed Tomography (2018 version) [in Chinese]. *Zhongguo Fei Ai Za Zhi*. 2018;21:67-75.
14. Ettinger DS, Aisner DL, Wood DE, Akerley W, Bauman J, Chang JY, et al. NCCN guidelines insights: non-small cell lung cancer, Version 5.2018. *J Natl Compr Canc Netw*. 2018;16:807-21.

See Article page 824.

Commentary: The changing risk paradigm in lung cancer: Are we opening Pandora's box?

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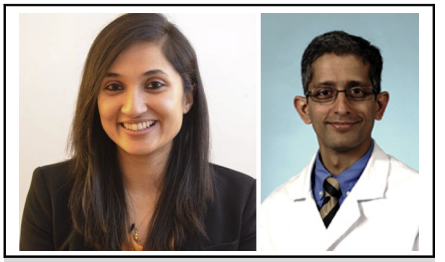

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CENTRAL MESSAGE

Lung cancer screening guidelines may need to be individualized to populations.

With an estimated 228,000 new cases of lung cancer in 2019 alone, lung cancer continues to be the leading cause of cancer-related deaths in the United States.[1] The global burden of this disease has shown a similar trend.[2] Comparable with the United States, lung cancer is the most common malignancy and cause of cancer-related mortality in China, with more than 690,000 lung cancer deaths in 2018.[3]

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