

Early screening of lung cancers: an effort arduous but worthwhile

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Submitted Nov 15, 2015. Accepted for publication Dec 06, 2015.

doi: 10.3978/j.issn.1000-9604.2015.12.04

View this article at: <http://dx.doi.org/10.3978/j.issn.1000-9604.2015.12.04>

Cancers are a concerning health catastrophe worldwide that may become the end of lifetime for many of us—they overwhelmingly exhaust medical resources, lead to huge economic burdens, and separate people from their beloved ones. Fewer and fewer insurance agencies are willing to include primary cancers on their general health insurance plan, just because cancers have been so flummoxingly usual in our daily life that many primary cancer claims would give rise to much less profits.

Globally, lung cancer is the leading cause of all cancer deaths. It was estimated that 1.4 million deaths in 2008 were caused by lung cancer (1). Although the epidemiology varies due to socio-economic factors in various countries and regions (2-4), lung cancers are fatal in all nations: the 5-year survival of lung cancer is below 20% everywhere in Europe, among 15–19% in North America, and as low as 7–9% in Mongolia and Thailand (5).

Given the high incidence and poor survival rate, the only solution to increase the efficiency of lung cancer control should be the earliness in detection, diagnosis and treatment, because many patients were at the advanced stage of lung cancer when first diagnosed, and were thus ineligible for radical resection or impossible for surgery. And to this end, early detection achievable by lung cancer screening may greatly result in clinical benefits for patients.

Until recently, the controversy over low-dose CT scan for lung cancer screening was hectic, but now has finally been ended as the release of the outcome of the National Lung Screening Trial (NLST), which observed that low-dose CT screening reduces the mortality from lung cancer at 20.0% (6).

Lung cancer is not diagnosed by symptoms alone; on the contrary, a large majority of early-stage lesions may appear clinically silent, and therefore escape detection (7). As the tumor progresses, multiple symptoms often co-occur: a lingering cough with occasional bloody sputum, weight loss, fatigue, dyspnoea, anxiety and depression. Then, the tumor involves surrounding tissues, with notable various clinical signs (8). In most of the cases, the sight of clinical signs may mean middle to late phase of the disease. A survey showed that the median total wait time is approximately 4.5 months for patients suspected with lung cancers to visit doctors, receive examinations and undergo treatments (9). This interval might be much longer in developing and under-developed countries. On the other hand, the time to first proper diagnosis is crucially important for patients with lung cancer; for instance, small cell lung cancer would become fatal shortly within two to four months if undetected and untreated (10).

The Centers for Medicare & Medicaid Services (CMS) in the US determined earlier this year to use low-dose computed tomography (LDCT) for lung cancer annual screening as a preventive service benefit for those under the Medicare program. The CMS also gave detailed criteria for institution entry, eligibility of radiologists, and radiological imaging facilities (11). The CMS program is the first one to pay for early screening fee in the elderly and the disabled by the government in a hope to save more life.

The NLST finding does bring us hope to better control lung cancer and the US is in action. However, a trial by Infante *et al.* has pointed out the uncertainty on the efficacy of LDCT screening in a community setting (12). The

positive results reported in the US studies may not be suitable beyond the US. Though the criteria are specific, the negative effects of LDCT screening as well as our knowledge gaps must be considered (2). Disputes remain on the cost-effectiveness of LDCT in lung cancer screening in spite of the huge expenses on moderate to late stage lung cancer treatment (13). Moreover, the long-term efficacy of LDCT is also doubted (12). How to screen lung cancers early for the never-smokers who are more likely to present tumors with delayed diagnosis than smokers to is to be further studied (14).

Early screening of lung cancers, a seemingly easy conception, is such a difficult issue in clinical practice. There is still a long distance to cover before we find the way out. Whatever better outcomes we could reach, it remains extremely important for people to avoid carcinogenic agent exposure (15). Quitting smoking, rising awareness of self-protect in air pollution, cooking fumes and indoor decoration pollution are always necessary.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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Cite this article as: Pei C, Grouse L, Zeng G. Early screening of lung cancers: an effort arduous but worthwhile. *Chin J Cancer Res* 2015;27(6):617-618. doi: 10.3978/j.issn.1000-9604.2015.12.04