

20-year Lung Cancer Survival Rates in the International Early Lung Cancer Action Program (IELCAP)

PURPOSE

To estimate 20-year lung cancer-specific survival (LCS) of 87,416 participants enrolled in a prospective, international, multicenter study of CT screening for lung cancer (I-ELCAP) using low-dose CT (LDCT) for early detection of lung cancer (LC) with particular attention to LCs manifesting on CT images as solid, part-solid and nonsolid consistency on behalf of the I-ELCAP Investigators.

METHODS AND MATERIALS

In 1998, we gave an oral presentation at the RSNA on low-dose CT screening for lung cancer (ELCAP), followed by the Lancet publication in 1999. That publication stimulated the National Cancer Institute to develop a randomized trial for further evaluation of LDCT screening, the National Lung Screening Trial (National Cancer Advisory Board 111st Regular Meeting Minutes, September 23-24, 1999). In 2006, we reported on the expansion of ELCAP to a multi-institutional, international cohort, called I-ELCAP, and provided the 10-year LCS of 80% (95% CI: 74-85) for 484 participants with first primary diagnoses of LC, either screen- or interim diagnosed, in the New England Journal of Medicine. Since its start in 1992, I-ELCAP has enrolled 87,416 participants, 40 years of age and older, current, former, and never smokers by December 31, 2021. We now provide the 20-year Kaplan-Meier LCS, regardless of treatment, overall and separately by LC consistency on CT (solid, part-solid, nonsolid). We also estimated LCS for clinical Stage IA and for resected pathologic stage IA LCs 10mm or less in average diameter of length and width on the same CT image.

RESULTS

20-year LCS for all 1285 I-ELCAP participants diagnosed with LC was 80% (95% CI: 77-83%). LCS was 100% for 139 participants with nonsolid and 155 with part-solid consistency, and 73% (95% CI: 69-77) for the 991 with solid consistency. LCS for clinical Stage IA participants was 86% (95% CI: 83-89), regardless of consistency. For participants with pathologic Stage IA LCs 10 mm or less in average diameter, the 20-year LCS was 92% (95% CI: 87- 96).

CONCLUSIONS

This confirms our previous estimates of lung cancer survival rates and adds further evidence of the high curability of lung cancer diagnosed by screening. No LC deaths were identified in part-solid and nonsolid cancers. LC consistency is an important predictor of LC survival and should be considered in updated staging criteria as has already been accepted in the pathologic criteria.

CLINICAL RELEVANCE/APPLICATIONS

LDCT screening provides for detection of early-stage lung cancers. We are providing the 20-year lung cancer specific survival rates for all I-ELCAP participants which reflects the high cure rate of screen-detected lung cancers.