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X-ray Screening for Lung Cancer: Is It an Option for At-risk Smokers?

by Robert W. Frelick, M.D.

Research studies about the benefits of lung cancer screening have evolved considerably over the years, due in large part to improved medical technology, particularly CT imaging.

Initiated 40 years ago, the first major X-ray screening study involved 6,136 men who were followed over a 10-year period.¹ Findings released in 1970 showed that the survival rate was not significantly altered by X-ray screening.

In the mid 1970s, a screening trial at Memorial Sloan-Kettering, Johns Hopkins, and the Mayo Clinic failed to show a reduced death rate using either sputum or chest X-rays, although it was suggested that the latter might have some benefit in high-risk individuals.² Thus, few chest X-rays were advised for periodic checks of tobacco users or even for clearing a patient for a surgical procedure.

Recently, however, enthusiasm about the ability of spiral CT to image early lung cancers has reawakened interest in reducing the death rates from lung cancer by detecting early treatable lesions.³ Findings from the Surveillance, Epidemiology, and End Result (SEER) Program of the National Cancer Institute have shown a 40 percent five-year survival for localized lung cancers. There have even been some reports of a 70 percent five-year survivor rate for early cases.⁴

THE CHRISTIANA EXPERIENCE

Because of these SEER findings, a study was recently done at

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Christiana Hospital in Wilmington, Del. The study population included 249 five-year survivors of lung cancer out of 2,190 cases in the hospital's cancer registry from 1987 through 1994. Chest surgeons at the hospital suspected that most of their lung cancer long-term survivors were detected by "incidentally taken" chest X-rays.

Findings from the study showed:

- Most (84 percent) of the non-small cell lung cancer cases as well as the small cell cancer cases were patients ages 55 to 80.
- Significantly fewer patients less than age 55 with non-small cell lung cancer were localized as compared to those older than age 55. This suggests that non-small cell cancers are more aggressive in patients less than 55 years of age. Patients with aggressive cancers are less likely to be long-term survivors, although the overall five-year survival is slightly better in patients less than age 55. This finding may be explained by the fact that younger patients tend to be treated more aggressively, and there is more co-morbidity in older patients, many of whom may receive no specific cancer treatment. Image screening in younger patients with more aggressive cancers may be of less value than in older patients.
- The majority of localized cases had no recorded symptoms, and most appeared to have received incidental chest X-rays, which found a lesion.
- The overall five-year survival rate was 11.4 percent, while the five-year survival rate for localized non-small cell cases was 57 percent.
- For stage I non-small cell lung cancer cases, treatment by surgery was far more common in patients older than age 55. Patients with small cell lung cancer received very little surgery. Instead, these

patients received chemotherapy and radiation. Many of the more advanced cases of both small cell and non-small cell lung cancer were not treated.

FINAL THOUGHTS

Among those smokers with 20-pack years of tobacco exposure, it seems likely that individuals ages 55 to 80 will be the best candidates for screening. However, smokers less than age 55 with 10- to 20-pack years and a chronic cough should also be considered.

Serial CT scans are obviously more sensitive than regular chest X-rays, but their ultimate value for improving survival in tobacco users must still be determined through randomized trials. Until the costs for spiral CT imaging are reduced, and until we can define earlier which small lesions are malignant, the use of routine chest X-ray screening for 20-pack year smokers between 55 and 80 years of age should be considered. ■

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