



CAP Lung Cancer Medical Writers' Circle

EARLY DETECTION OF LUNG CANCER

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Lung cancer is the leading cause of cancer related death among men and women in America. In 2008 it is estimated that there were 215,000 new cases of lung cancer and 162,000 deaths (1). What is most frustrating is that over 90% of lung cancer cases could be prevented by the elimination of smoking. Sadly, tobacco farmers, cigarette companies, tax hungry governments, and society as a whole have been unable to do what is right; to do everything possible to decrease the attractiveness of cigarette smoking. The incidence of cigarette smoking has declined to 24% in America (1), and is most heavily concentrated among the poor and disadvantaged, who therefore pay the greatest burden of cigarette taxes and suffer the greatest health consequences of smoking.

The vast majority of lung cancer today is nonsmall cell lung cancer, which is best cured surgically when it is found as a small, easily removable tumor in the lung. However, the vast majority of lung cancer patients currently present with such symptoms as cough, chest pain, weight loss, and hemoptysis (coughing up blood), and such patients usually have stage 3 (lung cancer has spread extensively to the lymph nodes of the chest) or stage 4 (lung cancer has spread outside the chest) lung cancer which have very low cure rates, and are not generally amenable to surgery

The realization that stage 1 (a single small tumor confined to the lung tissue with no lymph node involvement) lung cancer can commonly be cured with surgery, and that symptomatic lung cancer is too commonly incurable, has led to efforts to screen or to detect lung cancer in patients when the disease is small and asymptomatic. It is important to understand that screening implies testing individuals who have no current symptoms of disease but who are at risk of developing a disease. The goal of screening is to detect a disease when the patient is asymptomatic and when the disease is at an early stage; for lung cancer the goal of screening is to detect lung cancer when it is stage 1 and readily curable by surgery. Current or prior smokers, who have smoked heavily for many years, are an ideal group to screen as they are at increased risk of developing lung cancer.

Screening trials for lung cancer have been ongoing since the 1960's (2, 3), and studies from that era attempted to screen high risk individuals with chest x ray and sputum cytology (evaluation of sputum for cancer cells). While screening with chest x rays and sputum cytology were able to detect more asymptomatic lung cancers, the overall lung cancer survival was not improved in screened patients in large randomized trials (4). The lack of benefit of



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sputum cytology and chest x ray screening is likely due to the difficulty for this technology to find stage 1 lung cancer, which has the highest cure rate.

CAT scans are able to identify very small lung cancers, and this technology is currently being tested in an attempt to screen current and ex smokers. The technology is very powerful, and early trials have suggested that early stage lung cancer can be identified and cured using CAT scan screening (5). However, large scale randomized trials have not yet confirmed these early results, and many smokers/ex-smokers who undergo CAT scan screening have benign nodules, which require careful follow-up and may require a biopsy or removal to ensure that they are benign. All authoritative bodies have recommended against routine CAT scan screening for smokers/ex-smokers unless done in the context of a clinical trial.

Other technologies, including PET scan imaging, and molecular and genomic analysis of sputum samples, are currently undergoing early evaluation as possible screening methods. None can yet be recommended outside of a clinical trial.

In summary, over 90% of lung cancer cases could be eliminated through the cessation of smoking. No screening strategy can yet be recommended as a proven strategy to reduce the death rate from lung cancer. Research trials are ongoing to determine if any current technology can be used as a screening tool to decrease the death rate from lung cancer.

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