It's Time to Pick the Low-hanging Fruit

by: Thomas L. Petty, M.D.

The epidemic of lung cancer continues unabated. Success in preventing teenagers from becoming addicted to tobacco has been effectively thwarted by the continued and unrelenting efforts of the tobacco industry. Today approximately 49 million people continue to smoke in the United States. Although there are more quitters today than ever before, many persons have been exposed to enough carcinogens from tobacco to remain at excess risk, probably for their lifetimes. In fact, more lung cancer is diagnosed in former smokers today than in active smokers'. Even if we had unexpected and miraculous success in reducing smoking in the next few years, lung cancer would not substantially decline for more than 20 years'.

The dogma against lung cancer screening that has been promoted for more than two decades has led to indifference in case finding, and essentially no efforts in screening. This policy comes from studies conducted in the 1970's that have been questioned[2,3]. Many cancers were missed due to limitations of the screening techniques employed[4]. We know exactly who gets lung cancer, and where the yield of new diagnostic techniques would be high. The highest risk is in smokers with any degree of airflow obstruction. Approximately 2% of these individuals have lung cancer at the time of diagnosis by sputum cytology'. Approximately 25% of these patients have moderate to severe dysplasia, which are probably pre-cancerous lesions`. Cancers that are found by sputum cytology are mostly central squamous carcinomas. CT scans help to identify peripheral nodules that are most often adenocarcinoma. Today new helical CT scans are becoming more widely available. They should be employed today in patients at highest risk. Even a standard chest x-ray can improve detection and survival'.

Earlier, we showed in a community-based case finding study that both squamous and adenocarcinomas can be found when they are roentgenographically occult. When treated by surgery or radiotherapy, the five year survival is better than 50%[6]. Most of these patients had coexisting airflow obstruction. The Lung Health Study, which focused on mild to moderate COPD, revealed a 1% death rate in five years from unexpected cancer'. Late follow-up now reveals 2% lung cancer from this group of middle-aged smokers with only mild degrees of airflow obstruction (D. Miller, personal communication). The presence of airflow obstruction yields four to six times more lung cancer than in matched patients with normal airflow[7].

When lung cancer is diagnosed in early stages, the survival is excellent. This is the case for other common cancers, such as breast, colon, uterine, and prostate cancer, all of which are aggressively pursued by appropriate screening techniques where reimbursement is no longer a question. We need the same for lung cancer. A very recent study offers a pragmatic approach to lung cancer screening via high resolution CT scanning [10]. The yield rate of diagnosis of small non-calcified malignant lesions was increased four fold over standard chest radiology. When early small lesions are resected, the survival can be as high as 80% or more [10]. This study was done in smokers of over 10 pack years who were older than 60 years.

I believe the evidence strongly indicates that smokers over the age of 40 who have smoked 30 or more pack-years along with airflow obstruction, as measured by simple spirometry, should have a combination of sputum cytology done in a qualified laboratory, and a helical CT scan, to identify otherwise occult lung cancer. Fiberoptic bronchoscopy can locate many lesions, but flourescent endoscopy is a more sensitive technique for identifying and treating early stage lung cancers". If we follow this simple approach, we will find that we can identify and cure lung cancer in its early stages. It is likely that together, the techniques now available to us will yield approximately 90% early stage carcinoma. We can learn the cost of early lung cancer treatment and compare it with the costs of treating lung cancer as it is usually diagnosed based on symptoms or from chest x-rays taken for measures other than to diagnose lung cancer. These costs are approximately $50,000 per patient with a survival rate of only 22% after two years [12]. Costs of treating early stage lung cancer remain to be determined. A reasonable estimate would be no more than $10,000 per patient, including diagnostic costs and resectional surgery. Here the survival rate would be at least 80% at five years [13].

It could be argued that this approach will miss some lung cancers. Certainly this is likely to be the case, but we are missing most lung cancers now through a policy of non-screening which has blocked progress [14]. Case findings in high risk patients will give a high yield of lung cancer as has been suggested before' [s]. This is the low-hanging fruit which can be readily harvested by using new lung cancer diagnostic techniques at virtually all major hospitals in the United States today. Once we succeed in this harvest, we can climb higher into the tree!

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