Rightsizing lung cancer surveillance

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Central Message

A pragmatic trial comparing varying intensities of surveillance among lung cancer survivors can overcome the limitations of observational studies and potentially lead to more efficient use of imaging.

See Articles pages 1196 and 1205.

Among patients who undergo operations for lung cancer, the risk of recurrence peaks during the first 2 years after surgery and the risk of a new primary lung cancer is substantially higher than in the general population.¹ The intent of surveillance imaging is to detect both recurrent and new lung cancers early—when the disease is curable.

Two investigations provide evidence that surveillance imaging may be beneficial. Both studies report high rates of early detection, high rates of treatment for recurrence or new primary lung cancer, and high 5-year survival rates for treated patients.^{2,3} The study by Wang and colleagues² also provides a novel description of prevalent (ie, synchronous) lung cancers among survivors undergoing surveillance.² However, the investigation by Subramanian and colleagues³—using a unique data source consisting of tumor registry (not administrative) data supplemented by human chart abstraction—reveals no relationship between survival and the intensity of surveillance. This finding sounds a cautionary note about the possible benefits of intense imaging surveillance.

Despite the strengths of these 2 carefully conducted investigations, the evidence base supporting lung cancer surveillance remains weak due to the limitations of observational study designs. Limitations such as lead and length time bias, confounding, and time-varying surveillance imaging are examples of potential threats to the validity of observational studies.^{4,5}

A randomized trial can overcome these limitations if we can agree on the most important question to answer. Preliminary findings from a French trial randomizing patients to computed tomography (CT) versus chest radiograph surveillance showed no effect of surveillance on survival.^{6,7} There is likely no appetite for repeating a similar trial given prevailing, strong beliefs in North America in favor of surveillance imaging with CT. Although there is no evidence to date that surveillance imaging causes patient harm, it is possible that we overutilize imaging without any benefit to patients. A trial could be conducted to compare outcomes across 2 extremes of surveillance

intensity (eg, CT every 3 vs 12 months [8 vs 2 scans over a 2-year surveillance period] with annual follow-up imaging thereafter in both groups). Contrasting 2 extremes is more likely to reveal an effect of surveillance imaging on survival if one really exists. Such a trial would close a significant knowledge gap over the optimal intensity of surveillance imaging, and therefore have a large influence on the delivery of lung cancer care. However, such a trial would be expensive. A value-of-information analysis estimates the return on investment from conducting a study like that and may provide the justification to move forward with a large, multicenter pragmatic trial.⁸ Given how much we have learned from investigations such as the National Lung Screening Trial and the National Emphysema Treatment Trial,^{9,10} thoracic surgeons should provide the leadership and advocacy necessary to pursue a lung cancer surveillance trial.

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