Pulmonary Nodule on CT

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My wife was recently notified of the possibility of a "small malignancy" in the right upper lobe of her lung. The lesion was categorized as a "subpleural, subcentimeter (8mm) pulmonary nodule" confirmed by a contrast CT scan. She is a smoker, age 46. We have seen a thoracic surgeon for consultation and were told that nothing should be done right now, just monitoring by CT scans every three months. Presumably we are to wait for something to happen, and then do something, but we want to act now. Any suggestions?

Anil Vachani, MD, Pulmonologist at Penn Medicine, responds:

Most pulmonary nodules discovered on CT scan are ultimately determined to be benign, particularly when the nodule is less than 1cm in size. Given this, the most commonly used approach for individuals with a small nodule is to undergo surveillance with a repeat CT scan. This approach takes advantage of the fact that a cancerous nodule will grow but a benign nodule will remain stable. Although I cannot specifically comment on this case without reviewing your wife's history and films, one approach is to follow the algorithm that has been established by the Fleischner Society (see below). For patients with a solid, non-calcified nodule between 6 and 8 mm, the preferred option is to obtain a repeat CT scan in 6-12 months. Alternatively, one could obtain a PET scan and if positive, consider performing a biopsy. It should be noted that the accuracy of the PET scan is less useful for smaller nodules, particularly those smaller than 8-10 mm.

Some things we have learned about pulmonary nodules through several recent studies include:

- Approximately 25-50% of all smokers over age 50 have at least one pulmonary nodule that is 4mm or larger.
- The probability that a nodule is malignant increases with increasing size of the nodule. Even in smokers, the percentage of all nodules smaller than 4 mm that will eventually be confirmed as lung cancer is less than 1%. For those nodules between 5.0-9.0 mm, the percentage is approximately 2%.
- The likelihood that a nodule is cancerous is also greater with increasing age and in individuals with a smoking history.

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Fleischner Society 2017 Guidelines for Management of Incidentally Detected Pulmonary Nodules in Adults

A: Solid Nodules*

Nodule Type	Size: <6 mm (<100 mm³)	Size: 6–8 mm (100–250 mm³)	Size: >8 mm (>250 mm³)	Comments
Single				
Low risk†	No routine follow-up	CT at 6–12 months, then consider CT at 18–24 months	Consider CT at 3 months, PET/CT, or tissue sampling	Nodules <6 mm do not require routine follow-up, but certain patients at high risk with suspicious nodule morphology, upper lobe location, or both may warrant 12-month follow-up (recommendation 1A).
High risk†	Optional CT at 12 months	CT at 6–12 months, then CT at 18–24 months	Consider CT at 3 months, PET/CT, or tissue sampling	Nodules <6 mm do not require routine follow-up, but certain patients at high risk with suspicious nodule morphology, upper lobe location, or both may warrant 12-month follow-up (recommendation 1A).
Multiple				
Low risk†	No routine follow-up	CT at 3–6 months, then consider CT at 18–24 months	CT at 3–6 months, then consider CT at 18–24 months	Use most suspicious nodule as guide to management. Follow-up intervals may vary according to size and risk (recommendation 2A).
High risk†	Optional CT at 12 months	CT at 3–6 months, then at 18–24 months	CT at 3–6 months, then at 18–24 months	Use most suspicious nodule as guide to management. Follow-up intervals may vary according to size and risk (recommendation 2A).

B: Subsolid Nodules*

Nodule Type	Size: <6 mm (<100 mm³)	Size: ≥6 mm (>100 mm³)	Comments
Single			
Ground glass	No routine follow-up	CT at 6–12 months to confirm persistence, then CT every 2 years until 5 years	In certain suspicious nodules < 6 mm, consider follow-up at 2 and 4 years. If solid component(s) or growth develops, consider resection. (Recommendations 3A and 4A).
Part solid	No routine follow-up	CT at 3–6 months to confirm persistence. If unchanged and solid component remains <6 mm, annual CT should be performed for 5 years.	In practice, part-solid nodules cannot be defined as such until ≥6 mm, and nodules <6 mm do not usually require follow-up. Persistent part-solid nodules with solid components ≥6 mm should be considered highly suspicious (recommendations 4A-4C)
Multiple	CT at 3–6 months. If stable, consider CT at 2 and 4 years.	CT at 3–6 months. Subsequent management based on the most suspicious nodule(s).	Multiple <6 mm pure ground-glass nodules are usually benign, but consider follow-up in selected patients at high risk at 2 and 4 years (recommendation 5A).

Note.—These recommendations do not apply to lung cancer screening, patients with immunosuppression, or patients with known primary cancer.

* Dimensions are average of long and short axes, rounded to the nearest millimeter.

† Consider all relevant risk factors (see Risk Factors).

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lung nodule, lung cancer screening, broncoscopy

No

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