SOUTHEASTERN CONNECTICUT IMAGING CENTER
AN OCEAN RADIOLOGY ASSOCIATES / L & M SYSTEMS PARTNERSHIP

Radiology Special Alert

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Management of Small Pulmonary Nodules

The accepted standard of practice is to regard all non-calcified nodules as potentially malignant lesions that require close monitoring until proven stable over a period of 2-years.

Several observations from ongoing large lung cancer screening programs utilizing CT are as follows:

1. The ongoing Mayo Clinic CT Screening Trial has reported that fewer than 1% of nodules <5mm in patients without a history of lung cancer were malignant.
2. Lung cancers can be classified as solid or nonsolid (ground glass opacity). The mean volume doubling time is 149-days for a solid lung cancer and 813-days for ground glass lung cancers.
3. Even in smokers, less than 1% of all nodules <4mm in size will turn out to be malignant. 10-20% of nodules in the 8mm range will be malignant.
4. Cigarette smokers are at greater risk for lethal cancers and malignant nodules in smokers grow faster than do those in non-smokers.
5. Lung cancer is rare in patients less than 35-years of age and increasing patient age correlates with increasing likelihood of malignancy.

Management guidelines published in 2003 in the New England Journal of Medicine recommended CT follow-up at 3, 6, 12, 18, and 24-months for all indeterminate, “low probability” nodules, regardless of size. The rationale for this management is that some of these indeterminate nodules will be malignant and that early intervention will allow for cure.

The downside of this policy is potential morbidity and mortality from surgery for benign nodules, poor utilization of limited resources, unnecessary patient anxiety, and increased radiation burden for the affected population.

Given this background of information, the Fleishner Society has issued the following set of recommendations for management of nodules detected incidentally at non-screening CT:

Recommendations for Follow-up and Management of Nodules Smaller than 8mm Detected Incidentally at Nonscreening CT		
Nodule Size (mm) *	Low-Risk Patient †	High-Risk Patient ‡
≤4	No follow-up needed §	Follow-up CT at 12 mo; if unchanged, no further follow up II
>4-6	Follow-up CT at 12 mo; if unchanged, no further follow-up II	Initial follow-up CT at 6-12 mo then at 18-24 mo if no change II
>6-8	Initial follow-up CT at 6-12 mo then at 18-24 mo if no change	Initial follow-up CT at 3-6 mo then at 9-12 and 24 mo if no change
>8	Follow-up CT at around 3,9, and 24 mo, dynamic contrast-enhanced CT, PET, and/or biopsy	Same as for low-risk patient

Note. ----Newly detected indeterminate nodule in persons 35 years of age or older.

* Average of length and width.

† Minimal or absent history of smoking and of other know risk factors.

‡ History of smoking or of other known risk factors.

§ The risk of malignancy in this category (<1%) is substantially less than that in a baseline CT scan of an asymptomatic smoker.

II Nonsolid (ground-glass) or partly solid nodules may require longer follow-up to exclude indolent adenocarcinoma.

Please note that these recommendations do not apply to patients with known or suspected malignant disease. The recommendations do not apply in patients younger than 35-years of age due to the fact that primary lung cancer is rare in this age group and the risks from radiation exposure in this group is greater than the older population.