

Asymptomatic Solitary Pulmonary Nodule

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Case History

A 73-year old man with diabetes type 2, hypertension and previous history of cardiovascular accident (CVA) undergoes chest radiography for yearly diabetes surveillance. He is non smoker and asymptomatic. On examination, patient is not tachypneic, no presence of cervical lymphadenopathy. Respiratory examination, breath sound was equal to both side and no obvious findings can be found.

On subsequent follow up, his chest radiography shows similar lesion with similar size and appearance.

1. Question: Describe the main findings in this chest radiograph.
2. What is the differential diagnoses and what is the next radiological investigation to confirm the diagnosis?

Answer:

Describe the main findings in the chest X-ray (Figure 1):

A solitary rounded homogenous opacity at right middle zone. This opacity has smooth margin with no focus of calcification within. No distortion of the pulmonary vasculature. No other lung nodule or calcification. No pleural effusion or pleural based thickening seen. No mediastinal or hilar lymphadenopathy. Subsequent chest radiograph after 4 and 6 month, shows similar findings and patient is still asymptomatic. A solitary pulmonary nodule (SPN) is defined as single, small in size which is less than 30 mm in diameter, it is usually well circumscribed and the lesion is surrounded completely by pulmonary parenchyma radiographically [1]. It is common discovered incidently through chest radiography or computed tomography of the neck, chest and abdomen. Patient is usually asymptomatic. Primary care doctors must decide and know how to evaluate the patient once it has been identified.

The differential diagnoses for solitary pulmonary nodules are in Table 1.

In order to evaluate and decide the next step of management for patient with solitary pulmonary nodule, we have to assess clinical features based on history and clinical findings to find out the risk factors probability of malignancy. Patient's age ≥ 60 years and current smokers were reported had strong association with malignancy [1,2]. The other risk factors need to be considered includes family history, female sex, emphysema, prior malignancy, and asbestos exposure [3]. There are

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Figure 1: Chest X-ray.

Table 1: The differential diagnoses for solitary pulmonary nodules.

Benign	Malignant
Nonspecific granuloma (15 to 25 percent)	Adenocarcinoma (47 percent)
Hamartoma (15 percent)	Squamous cell carcinoma (22 percent)
Infectious granuloma (15 percent)	Metastasis (8 percent)
-Aspergillosis	Non-small cell carcinoma (7 percent)
-Coccidioidomycosis	Small cell carcinoma (4 percent)
-Cryptococcosis	
-Histoplasmosis	
-Tuberculosis	

some radiological features to suggest either it is benign or malignant pulmonary nodules which are size, margin, calcification, shape, growth of the lesion, presence of air bronchogram sign, solid or ground glass component and contrast enhancement of the lesion. The size and growth of the lesion are very important and significantly correlate with risk of malignancy. The nodule size < 5mm has < 1 percent while > 20mm has > 50 percent risk of malignancy. Previously, the nodule that remained stable for two years or longer on chest radiograph was considered benign, however retrospective studies suggest that serial CT scan is preferred to assess growth changes especially in measuring the growth size [3].

The next step of management will be individualized, further radiological evaluation such as computed tomography (CT scan) or high resolution CT scan need to proceed for patient with presence of risk factors for cancer. In this patient, even age is the only risk factor and the subsequent repeated chest radiography shows the characteristic of the lesion does not change; we still need to proceed with computed tomography (CT) scan for further evaluation.

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