

A 40-Year-Old Woman With Multiple Pulmonary Nodules

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A 40-year-old woman (a nonsmoker) with history of idiopathic thrombocytopenic purpura and a platelet count $>90,000$ cells/ μL without specific medication was referred to pulmonary clinic for evaluation of multiple pulmonary nodules. The patient presented to an outside hospital with fatigue, lack of energy, and dyspnea on exertion for 2 years. She denied fever, cough, chest pain, or weight loss. An initial chest radiograph showed bilateral multiple pulmonary nodules. A chest CT scan revealed multiple nodular lesions, varying in size, in all lobes of both lungs. There was no mediastinal lymphadenopathy or pleural effusion. There was no significant hypermetabolic activity on a subsequent fluorodeoxyglucose PET scan/CT scan, and there had been no significant change. She underwent CT scan-guided percutaneous transthoracic biopsy and bronchoscopy with transbronchial biopsies, all of which were inconclusive. An open lung biopsy was considered.

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A physical examination revealed an alert and oriented patient without respiratory distress. Vital signs were normal except for a BMI of 34.7. Oxygen saturation was 99% on room air. Her overall exams were unremarkable.

Blood test results showed a hemoglobin value of 13.4 g/dL, hematocrit value of 41.5%, WBC count of 6,900 cells/ μL , and a platelet count of 92,000 cells/ μL . Her electrolytes, creatinine level, and liver function test results were normal. Her erythrocyte sedimentation rate was 7 mm/h (normal 0-29). Results on her serology panels were negative or normal, including antinuclear antibody (Ab), antineutrophil cytoplasmic Ab, rheumatoid factor, anti-double stranded (ds)-DNA Ab, Sm Ab, SS-A/SS-B Ab, ribonucleoprotein Ab, Scl-70 Ab, Jo 1 Ab. Her *Aspergillus* antigen test, fungal serologies, HIV enzyme-linked immunosorbent assay test, and TB skin test were negative.

A pulmonary function test showed no evidence of obstruction or restriction, normal inspiratory flow-volume



Figure 1 – Chest radiograph demonstrating multiple nodular opacities in both lungs.

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loop, diffusion capacity, and negative methacholine challenge test. She had a normal ECG, echocardiography, and overnight oximetry.

A chest radiograph is shown in Figure 1, and chest CT scans without contrast are shown in Figures 2A-F. CT scan of the abdomen and pelvis was done as part of a malignancy workup, and it did not show any lymphadenopathy or intraabdominal mass. Esophagogastroduodenoscopy found reflux esophagitis, and colonoscopy showed only a hyperplastic rectal polyp.

The patient underwent right video-assisted thoracoscopy with wedge excision from the superior segment of the right lower lobe and the anterior segment of the right upper lobe. Two nodules were identified in the right lower lobe and one nodule was identified in the right upper lobe; the largest nodule measured 0.7 cm at its greatest dimension. Microscopically, well-circumscribed, densely fibrotic nodules with a lymphoid rim were seen (Fig 3A). Higher magnification revealed thick, hyalinized bands of collagen arranged in a whorled fashion. Collagen

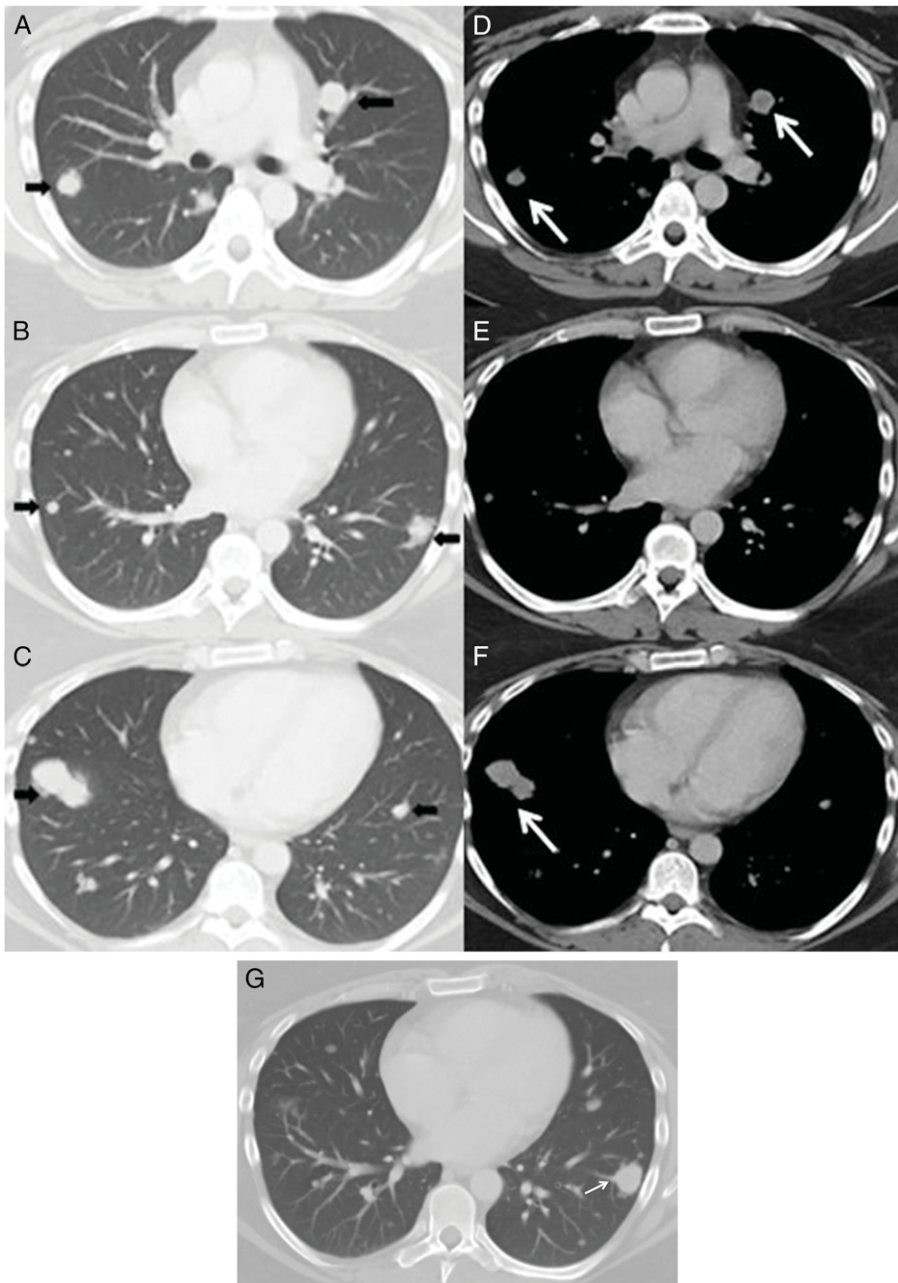


Figure 2 – A-C, Chest CT scans without contrast revealed multiple nodular lesions in all lobes of both lungs, variably distributed from the central zone to the periphery (black arrows). The nodules varied in size from 1.1 to 2.0 cm, having sharp to mildly irregular margins. The majority of these nodules are subpleural and fissural in location, anatomically a perilymphatic distribution. D-F, Soft tissue window at the same level demonstrates mildly heterogeneous soft tissue density (white arrows). No lymphadenopathy. No pleural or pericardial effusions. G, Some lesions had an associated “feeding vessel sign,” correlating with a perivascular distribution seen on pathology (white arrow).

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