



Innumerable pulmonary nodules

Early detection is critical with this aggressive disease. However, the patient's financial status prompted her to delay medical care.

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A 56-YEAR-OLD WOMAN with a history of a thyroid goiter following a partial thyroidectomy presented to the emergency department with shortness of breath, progressive weakness, and fatigue. She also reported a poor appetite and unintentional weight loss of approximately 40 lbs over the past 2 months but had not sought medical care. She denied having a cough, chest pain, hemoptysis, hematemesis, fevers, chills, or night sweats.

Physical examination revealed a cachectic woman with tachycardia and tachypnea, along with diffuse coarse rales throughout both lungs. The patient's initial heart rate was 101 beats/min; respiratory rate, 25 breaths/min; and oxygen saturation, 74% on room air. The results of a complete blood count and comprehensive metabolic panel were within normal limits. A chest radiograph was performed, showing innumerable subcentimeter- and pericentimeter-sized soft-tissue densities in both lungs (FIGURE 1). Computed tomography

(CT) of the chest was subsequently obtained to better characterize the nodules (FIGURES 2A and 2B). The CT revealed innumerable noncalcified pulmonary nodules as well as multiple hilar masses suggestive of malignancy; however, infectious etiologies could not be ruled out.

As the patient was visiting from a tuberculosis-endemic area, she was empirically started on rifampin, isoniazid, pyrazinamide, and ethambutol (RIPE) therapy for treatment of *Mycobacterium tuberculosis* infection. Subsequently, polymerase chain reaction (PCR) testing and acid-fast bacillus sputum smear came back negative for *M tuberculosis* and RIPE therapy was stopped. Bacterial culture and fungal screens for *Pneumocystis jirovecii*, *Coccidioides*, *Cryptococcus*, and *Histoplasma capsulatum* were negative.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

FIGURE 1

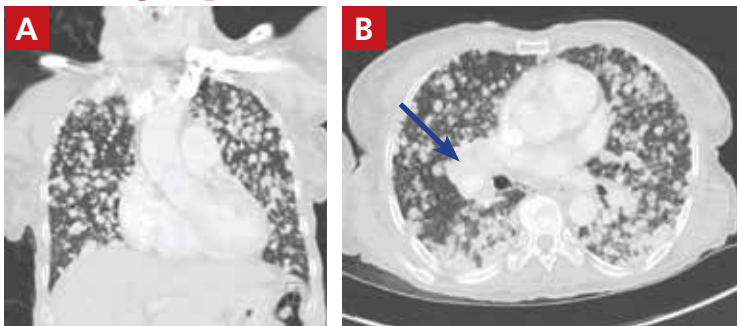
Soft-tissue densities in bilateral lungs on x-ray



IMAGE COURTESY OF BRIAN M. FUNG, MD

FIGURE 2

CT revealed hilar mass and offered a better glimpse of the nodules



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A coronal view of the chest showed pulmonary nodules throughout both lungs, measuring up to 10 mm (A). An axial view revealed a large hilar mass (arrow; B).

Dx: Metastatic follicular thyroid carcinoma

A biopsy of one of the lung nodules was performed and showed strong positive staining for thyroglobulin and thyroid transcription factor-1, establishing a diagnosis of metastatic follicular thyroid carcinoma. Further imaging revealed additional metastases to the brain, liver, adrenal glands, and spine.

■ **Follicular thyroid carcinoma** is the second most common histologic type of thyroid cancer, comprising 10% to 15% of thyroid cancer cases.¹ Distant metastases are not uncommon in this histologic type; about 11% of patients have distant metastases at presentation.² Compared with papillary thyroid cancer, which spreads via the lymphatics, the follicular type can metastasize via vascular invasion, thus leading to its “aggressiveness” and frequent occurrence of metastasis outside the neck (most commonly to the lung).¹ For this reason, an early diagnosis is important.³ In this case, the patient revealed that she hadn’t sought medical care at the onset of her symptoms due to financial limitations and limited access to medical providers; this likely contributed to the patient’s diagnosis at a late stage of disease.

Infectious and septic diseases are part of the differential Dx

The differential diagnosis for diffuse pulmonary nodules includes various infections, silicosis, coal worker’s pneumoconiosis, septic pulmonary emboli, and pulmonary sarcoidosis. All of these diagnoses can cause constitutional, as well as pulmonary, symptoms.

■ **Infections**, such as pulmonary tuberculosis, pulmonary coccidioidomycosis, or other cavitating infections, can be ruled out with specific testing for the organism of concern and/or culture.

■ **Silicosis and coal worker’s pneumoconiosis** generally cause lesions in the upper lobes and require a significant occupational exposure to silica or coal, respectively.

■ **Septic pulmonary emboli** are usually seen in the context of sepsis, and there are positive blood cultures at the time of imaging.

■ **Pulmonary sarcoidosis** typically manifests with hilar and mediastinal lymphadenopathy and is often accompanied by other organ involvement.

There are options for treatment if diagnosis is made early

Thyroidectomy, radioiodine treatment, and thyroid-stimulating hormone suppressive therapy are the most commonly used therapies for treatment of follicular thyroid carcinoma.⁴ If follicular thyroid carcinoma is caught early (with only local involvement), 5-year relative survival rates are near 100%.⁵ However, outcomes are generally poor in patients who are of older age and those who have macronodular lung metastases or multiple bone metastases.⁶

■ **Our patient** was started on levothyroxine. Radioiodine and targeted drug therapy with a tyrosine kinase inhibitor were attempted, but the patient was unable to tolerate them due to her poor functional status. She was thus transitioned to hospice care.

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REFERENCES

1. Aschebrook-Kilfoy B, Grogan RH, Ward MH, et al. Follicular thyroid cancer incidence patterns in the United States, 1980-2009. *Thyroid*. 2013;23:1015-1021. doi: 10.1089/thy.2012.0356
2. Shaha AR, Shah JP, Loree TR. Differentiated thyroid cancer presenting initially with distant metastasis. *Am J Surg*. 1997;174:474-476. doi: 10.1016/s0002-9610(97)00158-x
3. Lim IIP, Hochman T, Blumberg SN, et al. Disparities in the initial presentation of differentiated thyroid cancer in a large public hospital and adjoining university teaching hospital. *Thyroid*. 2012;22:269-274. doi: 10.1089/thy.2010.0385
4. Grani G, Lamartina L, Durante C, et al. Follicular thyroid cancer and Hürthle cell carcinoma: challenges in diagnosis, treatment, and clinical management. *Lancet Diabetes Endocrinol*. 2018;6:500-514. doi: 10.1016/S2213-8587(17)30325-X
5. Thyroid cancer survival rates, by type and stage. American Cancer Society. Updated January 25, 2021. Accessed February 1, 2022. www.cancer.org/cancer/thyroid-cancer/detection-diagnosis-staging/survival-rates.html
6. Durante C, Haddy N, Baudin E, et al. Long-term outcome of 444 patients with distant metastases from papillary and follicular thyroid carcinoma: benefits and limits of radioiodine therapy. *J Clin Endocrinol Metab*. 2006;91:2892-2899. doi: 10.1210/jc.2005-2838

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