

Bilateral Choroidal Metastases as Initial Presentation of Widespread Follicular Thyroid Cancer

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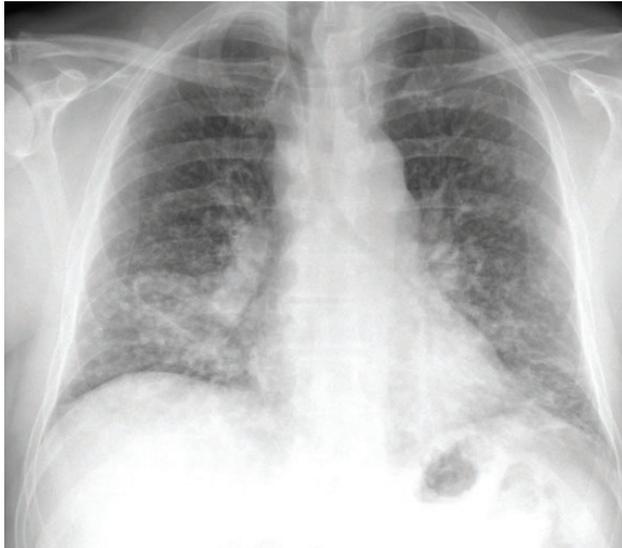


Figure 1.



Figure 2.

INTRODUCTION

Follicular thyroid cancer (FTC) is the second most common malignancy of the thyroid gland and comprise 10-15% of all thyroid tumors; the usual mode of spread is via hematogenous dissemination with the most common sites of metastases being the lungs and bones.⁴ A case is presented to demonstrate the unusual presentation of follicular thyroid cancer as bilateral choroidal metastases. Although exceptional, a diagnosis of choroidal metastases should be considered in any decline in visual acuity in patients with thyroid cancer.

CASE PRESENTATION

A 54-year-old male with a history of congenital left ear deafness, mitral valve prolapse, and right temporal hemangioma status post resection presented with a chief complaint of progressive visual changes and shortness of breath. The patient reported a two-month history of gradual nonproductive dry cough, which progressed to dyspnea on exertion and later at rest. He was initially diagnosed with atypical pneumonia by his primary care physician, but after a course of treatment with Doxycycline and Prednisone, he found no relief. Additionally, he gave a history of periorbital eye pain with

left eye vision loss and eventual right eye vision changes. Lung examination revealed fine inspiratory crackles. Thyromegaly with a discrete 3 cm palpable thyroid nodule was noted on examination. He was clinically euthyroid.

Chest x-ray revealed reticulonodular opacities in both lungs, concerning for multifocal pneumonia. Fine-needle aspiration of the thyroid revealed atypical follicular cells suspicious for neoplasm (figure 1). CT chest revealed innumerable pulmonary nodules, enlarged necrotic mediastinal nodes, and lytic lesions within the right lateral sixth rib and T3 vertebral body (figure 2). He was evaluated by ophthalmology for visual impairment and was diagnosed with bilateral intraocular choroidal lesions with retinal detachment.

OUTCOME AND FOLLOW-UP

The physical examination and radiographic findings in this patient were highly concerning for a metastatic malignancy. The fine-needle aspiration biopsy was suspicious for a thyroid primary tumor, however, the unlikelihood of follicular thyroid cancer to metastasize to include bilateral globes and diffuse pulmonary involvement put the diagnosis into question. Given the unclear clinical

picture, he underwent an endobronchial ultrasound biopsy of mediastinal lymph nodes for a definitive diagnosis which indeed revealed metastatic thyroid carcinoma. In the interim, his deteriorating visual acuity warranted emergent palliative radiation to bilateral globes to prevent worsening of his vision, consisting of 20 Gy in 5 fractions. Additionally, his course was complicated by episodes of perioral numbness and tingling, tongue weakness, and headaches. CT and MRI imaging of the brain revealed two enhancing parenchymal lesions, most consistent with metastases, and several extracranial metastases, including orbital wall and globes for which he underwent whole brain radiation.

A multidisciplinary team involving Medical Oncology, Endocrinology, Radiation Oncology, Neurosurgery, and Otolaryngology was involved in shared decision making for the patient. He was initiated on standard of care for metastatic follicular thyroid carcinoma. The patient underwent a total thyroidectomy with central neck dissection. Post-operatively he was initiated on T3 Cytomel, Calcitriol, and Calcium carbonate to maintain hormone levels. At the time of his most recent follow-up, the patient was planned for radioactive iodine ablation.

DISCUSSION

Follicular thyroid cancers account for 10-15% of all thyroid tumors. The peak incidence is in the 4th and 5th decade with a female predominance.⁷ Many cases are subclinical. Follicular thyroid cancers come to medical attention after finding a thyroid nodule on physical examination or incidentally by radiographic workup. While fine-needle aspiration is often the initial diagnostic next step in the evaluation of a thyroid nodule, it cannot distinguish follicular cancers from follicular adenoma. A fine-needle aspiration cytology report of "suspicious for follicular neoplasm" will prove to be benign follicular adenoma in 80% of cases.³ For this reason, surgical resection of the thyroid gland is necessary for histologic demonstration of tumor extension beyond capsule or vascular invasion.

The usual mode of dissemination is via the hematogenous route. About 15% of patients with follicular thyroid cancer have metastases beyond the cervical or mediastinal margins on initial presentation or it may occur as a delayed presentation following initial treatment.⁷ In patients whom a metastatic disease was diagnosed at initial presentation, the predominant metastatic sites were the lungs (49%), bones (25%) both lungs and bones (15%), and lastly CNS and other soft tissues (10%). Choroidal metastases secondary to follicular thyroid cancer is rare. When present, it often occurs in patients with advanced disease portending a poor prognosis.⁶ Fewer cases of bilateral choroidal involvement are reported in the literature. The choroid is a vascular

pigmented layer of tissue between the sclera and retina whose blood flow is ample.¹ The mainstay of diagnosis of choroidal metastases is by history and ophthalmologic assessment. Choroidal metastases can be asymptomatic or present with varying symptoms depending on the location. Decreased or blurred vision along with eye pain is a common symptom if choroidal metastases involve the optic nerve or macula. If associated with underlying retinal detachment, it can present with flashing lights and floaters.² By the time of ocular involvement, most patients have evidence of widely disseminated metastatic disease as with this patient.⁸

Current National Comprehensive Cancer Network guidelines recommend total thyroidectomy as the initial step if metastatic disease is apparent at the time of diagnosis of follicular thyroid carcinoma followed by post-operative use of radioactive iodine ablation.⁵ The rationale for this approach is for optimal uptake of radioactive material in residual tissue without competition from the thyroid gland. In this case, the demonstration of the highly proliferative nature and widespread burden of the patient's tumor portended a poor prognosis. Distant metastases are the principal cause of death from follicular thyroid cancers. While bilateral choroidal metastases are a relatively rare condition, further studies should identify this unique patient population for further characterization.

REFERENCES

1. Avram, A., et al. Choroidal and skin metastases from papillary thyroid cancer: case and a review of the literature. *The Journal of Clinical Endocrinology & Metabolism*. 2004; 89(11): 5303-7.
2. Besic, N. L. Choroidal and Orbital Metastases from Thyroid Cancer. *Thyroid*. 2013; 23(5), 543-51.
3. Haugen, B. R., et al. 2015 american thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the american thyroid association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid: official journal of the American Thyroid Association*. 2016; 26(1), 1-133.
4. Kitagawa, Y., Higuchi, F., Abe, Y., Matsuda, H., Kim, P., and Ueki, K. Metastasis to the choroid plexus from thyroid cancer: case report. *Neurologia medico-chirurgica*. 2013; 53(11), 832-6.
5. National Comprehensive Cancer Network. *Thyroid Carcinoma (Version 3.2018)*. https://www.nccn.org/professionals/physician_gls/pdf/thyroid.pdf. Accessed January 30, 2019.
6. Nixon, I., et al. The impact of distant metastases at presentation on prognosis in patients with differentiated carcinoma of the thyroid gland. *Thyroid: official journal of the American Thyroid Association*. 2012; 22(9), 884-9.
7. Parameswaran, R., Shulin Hu, J., Min En, N., Tan, W. B., and Yuan, N. K. Patterns of metastasis in follicular thyroid carcinoma and the difference between early and delayed presentation. *Annals of the Royal College of Surgeons of England*. 2017; 99(2), 151-154.
8. Sharifi, G., Bakhtevari, M. H., Alghasi, M., Nosari, M. A., Rahmanzade, R., and Rezaei, O. Bilateral choroid plexus metastasis from papillary thyroid carcinoma: case report and review of the literature. *World neurosurgery*. 2015; 84(4), 1142-6.