

A CHOROIDAL MASS: RARE PRESENTATION OF A METASTATIC DISEASE



An uncommon site for disease progression led to atypical first signs and symptoms of thyroid cancer metastasis.

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The uvea consists of the iris, choroid, and ciliary body. Ophthalmic sites of metastasis are rare overall; however, due to the highly vascularized nature of the uvea, hematogenous metastasis from systemic tumors occur more commonly to the uvea than to other ocular tissues.

Visual changes from choroidal metastasis are not typically the primary presenting symptom, as other sites of metastasis throughout the body are more common. However, in a study of 950 tumors that metastasized to the uvea, choroidal metastasis was the most frequent, with 838 examples. Metastasis to the iris and ciliary body were less common, with 90 and 22 examples, respectively.¹ This difference in frequency is speculated to be the result of the significant blood supply to the choroid via the posterior ciliary arteries.² Metastatic foci in the eye beyond the uvea include the eyelids, optic disc, retina, and conjunctiva, at much lower frequencies.^{1,3,4}

In individuals with an underlying distant metastatic tumor, breast and lung tumors are the most common.² Of the

other existing primary tumors with known metastasis, uveal metastasis as the initial presentation of thyroid cancer is exceedingly rare, with just two cases occurring in the aforementioned study.¹

In this article, we describe a patient with thyroid cancer in whom choroidal metastasis developed.

THE CASE

A 65-year-old man presented to our clinic with the chief complaint of a new blind spot in his right eye (OD). He

reported that the blind spot appeared 1 month prior to presentation and had worsened since onset. He reported no headache, pain with or without eye movement, flashes or floaters, or recent head or eye trauma. His medical history was significant for thyroid carcinoma, which was surgically resected along with a portion of his vocal cords. The patient did not receive iodine-131 or other chemotherapy for his cancer. His medication list included pantoprazole, amlodipine, calcitriol, and levothyroxine. He reported no use of

AT A GLANCE

- ▶ The authors present the case of a patient with a rare site of thyroid cancer metastasis (choroidal).
- ▶ Visual changes from choroidal metastasis are not typically the primary presenting symptom of metastatic disease, as other sites of metastasis are more common.
- ▶ Limited data exist regarding treatment efficacy and options for patients with choroidal metastasis because so few patients with this presentation have been reported.

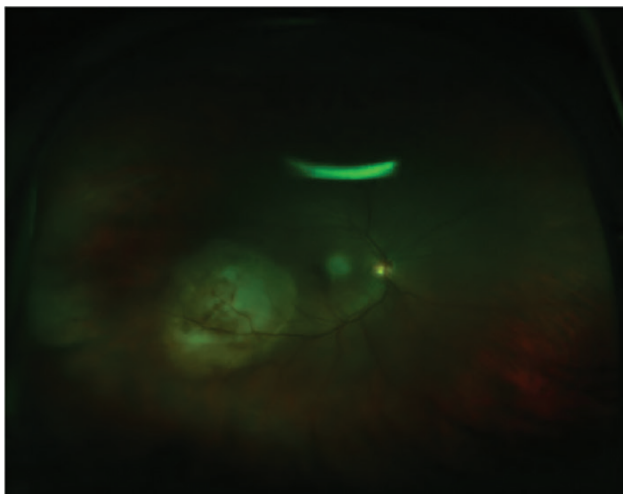


Figure 1. Color fundus photograph of the lesion highlights its orange color and location infratemporal to the macula.

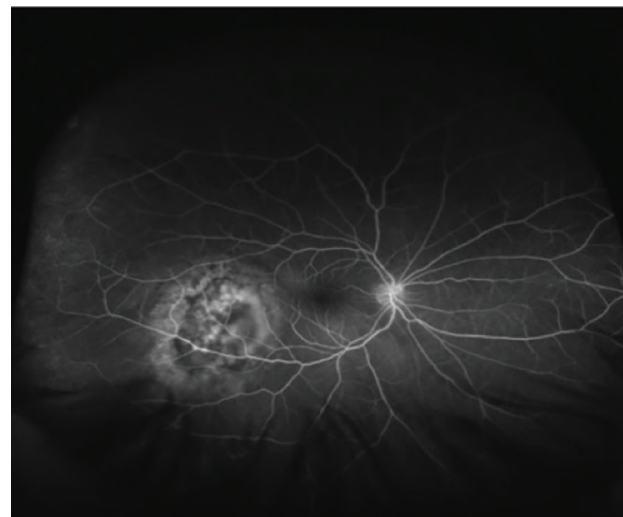


Figure 2. Fluorescein angiography identifies the mass and intact vasculature.

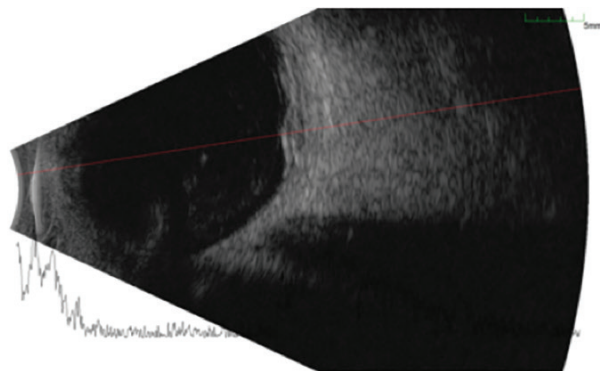


Figure 3. Ocular ultrasound reveals an elevated 12 mm by 14 mm posterior pole mass.

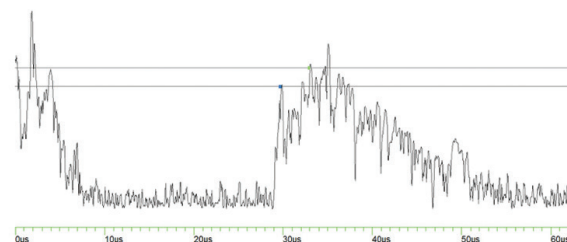


Figure 4. A-scan reveals an area of increased reflectivity.

ocular medications. His mother was previously diagnosed with primary open-angle glaucoma.

When the patient presented for his ocular oncology appointment, he had not developed any discomfort or pain in his eyes since his appointment with a referring physician that week. His VA was 20/100-1 OD and 20/60+2 in his left eye (OS). Posterior segment evaluation OD was significant for an elevated mass temporal to the macula, 4.5 by 8.0 disc diameters in size. Fundus photography of the lesion highlighted its orange color and size (Figure 1). Fluorescein angiography showed the mass infratemporal to the macula (Figure 2). Ocular ultrasound revealed an elevated posterior pole mass, 12 mm by 14 mm in size, with high internal reflectivity (Figure 3). Ultrasound A-scan demonstrated an area of increased reflectivity (Figure 4). The presumed diagnosis was choroidal metastasis from the patient's active thyroid cancer.

We obtained PET and MRI scans of the head and orbit with gadolinium for staging and guidance of planned subsequent external beam radiation. The PET scan revealed

worsening of his metastatic thyroid cancer, with worsening extensive nodal metastasis within the neck bilaterally, extending to the mediastinum and hila. There was also worsened 18F-fluorodeoxyglucose-avid bone metastasis. The patient was lost to follow-up due to extensive metastases to other sites. Unfortunately, after several months, the patient died prior to receiving external beam radiation treatment.

DISCUSSION

There are five predominant classes of thyroid cancer: papillary, medullary, follicular, undifferentiated (or insular), and lymphoma. Of these, follicular cancer has the highest propensity to disseminate hematogenously.⁵

The papillary thyroid cancer subtype is the most common subtype found in patients who have received radiation therapy during childhood and in those with so-called RET/PTC (rearranged during transfection/papillary thyroid carcinoma) or BRAF mutations.⁵ Medullary thyroid carcinoma, derived from neural crest parafollicular cells, or *C cells*, is seen in the familial

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cancer syndrome known as multiple endocrine neoplasia type 2 (A/B), which is also associated with mutations in *RET*, a proto-oncogene for a receptor tyrosine kinase protein.⁵

We do not know whether our patient had any of these risk factors, but, given that he had extensive local invasion into his vocal cords and surrounding tissue, it may be that the patient had an undifferentiated or anaplastic form of thyroid cancer, as these carry the highest risk for local invasion.⁵

As stated previously, although our patient already carried a diagnosis of metastatic thyroid cancer, visual symptoms are not frequently the first findings of an underlying disease. The predominant presenting symptoms in patients with choroidal metastasis are blurred vision and flashes and floaters, although an equal percentage of patients present as asymptomatic.^{1,6,7} Our patient presented with a blind spot in his vision but with neither flashers and floaters nor blurred vision. VA is also commonly affected. Our patient's VA was significantly decreased, at 20/80 OD compared with 20/50 OS. Both of these findings are likely due to the large size of the tumor and its location in the posterior pole.

The patient had a single focus of metastasis, which is common; however, multiple foci of metastasis are not uncommon, as seen with other manifestations of metastatic cancer.⁸ These metastatic foci are typically described as yellow or creamy flat patches, as compared with the typical brown color associated with melanoma. Interestingly, orange-colored metastatic lesions similar to that shown in our patient in Figure 1 are due to lipofuscin-laden macrophages released from damaged retinal pigment epithelial cells.^{1,3,4} These lesions likely represent spread from tumors such as thyroid, renal, and carcinoid cancers.¹ Lesions from the more common breast and lung tumors are typically brown.

Because so few patients with this presentation have been reported, there are limited data describing treatment efficacy and options. Known options include iodine-131 ablation, enucleation, photodynamic therapy, external beam radiation therapy, and chemotherapy.^{4,9} The clinical usefulness of each

treatment modality must be individualized based on the extent of the tumor, potential for improvement, risks of therapy, and patient wishes. With our patient, we were unable to obtain further imaging before his death and were unable to determine an optimal treatment plan. ■

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