

CASE STUDY

Iris Metastasis from Lung Adenocarcinoma

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Background

Metastatic tumors are the most common intraocular tumor in adults. However, ocular tumors as the first presentation of metastatic cancer is much less common. We present a case of a patient with an iris mass as an initial presenting sign of lung adenocarcinoma.

Patient Case

Our patient is a 60-year-old woman presenting with three weeks of progressively worsening right eye pain, redness and light sensitivity. She complains of blurred vision and floaters. Over the same time period, she also noted chest pain, shortness of breath and a cough. She presents to the emergency department for both her ocular symptoms as well as her shortness of breath. The patient's past medical history is notable for hypertension, hyperlipidemia and chronic obstructive pulmonary disease, and she is a current smoker.

Ophthalmology was consulted upon arrival to the emergency department for evaluation of her ocular symptoms. Initial exam was notable for 20/70 visual acuity in the right eye (OD) and 20/40 visual acuity in the left eye (OS). Intraocular pressures were 19 mm Hg OD and 14 mm Hg OS. The right pupil was irregular with distortion of the inferior border, but was reactive and without a relative afferent pupillary defect. The left pupil was round and reactive. Slit lamp exam was notable for a 4 mm heterogeneous, white, exudative mass extending inferiorly from the anterior chamber angle and peripheral iris and extending across the anterior border of the iris. There was peripheral irido-corneal touch, pigmented cells in the anterior chamber, and a 1 mm layering pseudohypopyon. (Figure 1). The remainder of the exam, including the contralateral eye and the dilated exam, was unremarkable.

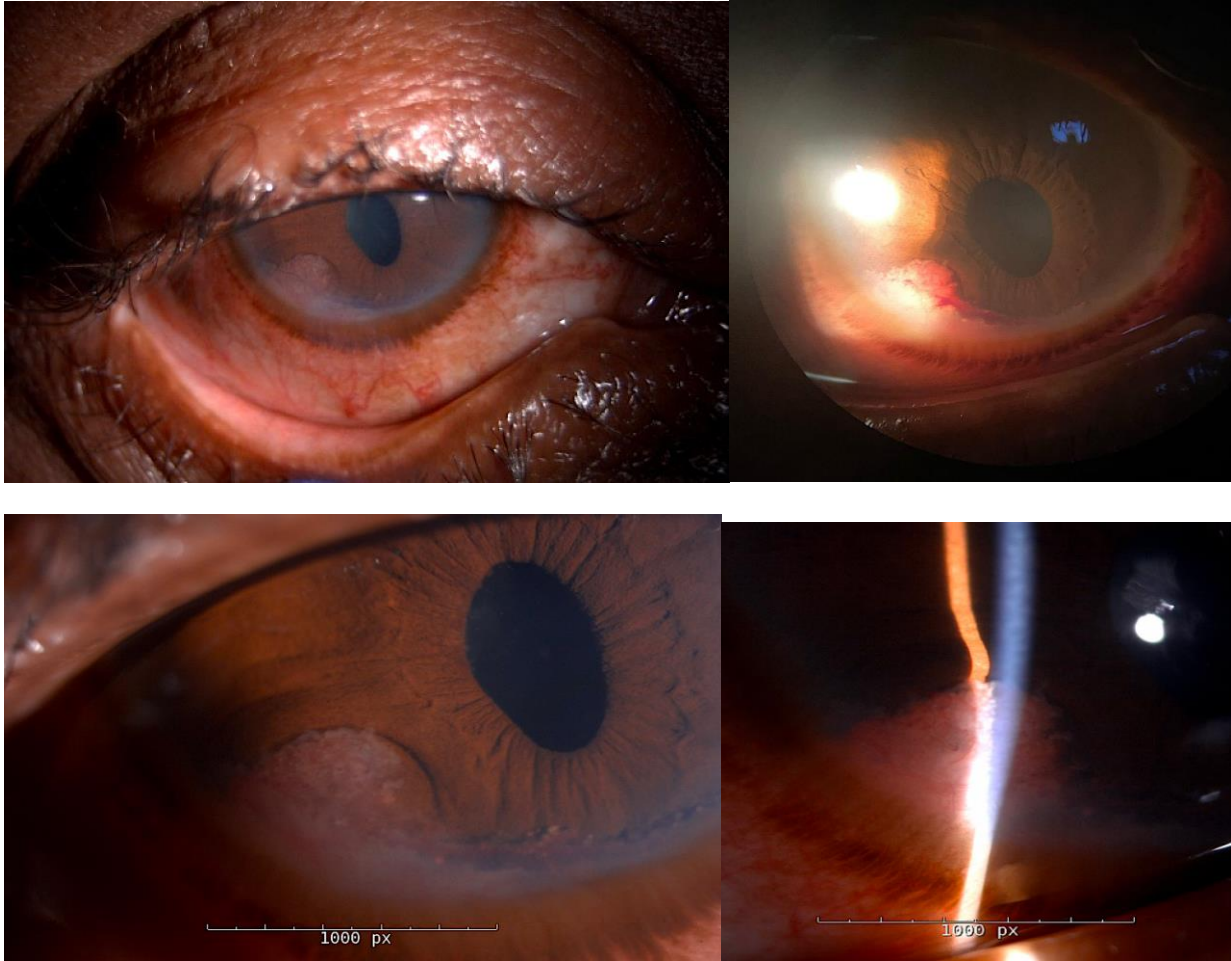


Figure 1: External photos and slit lamp photos of the right iris mass.

High-frequency ultrasound biomicroscopy was performed in the ophthalmology clinic which was notable for a heterogenous, hyperechoic mass extending from the ciliary body and iris root, with thickness varying between 3 and 4 mm (Figure 2).

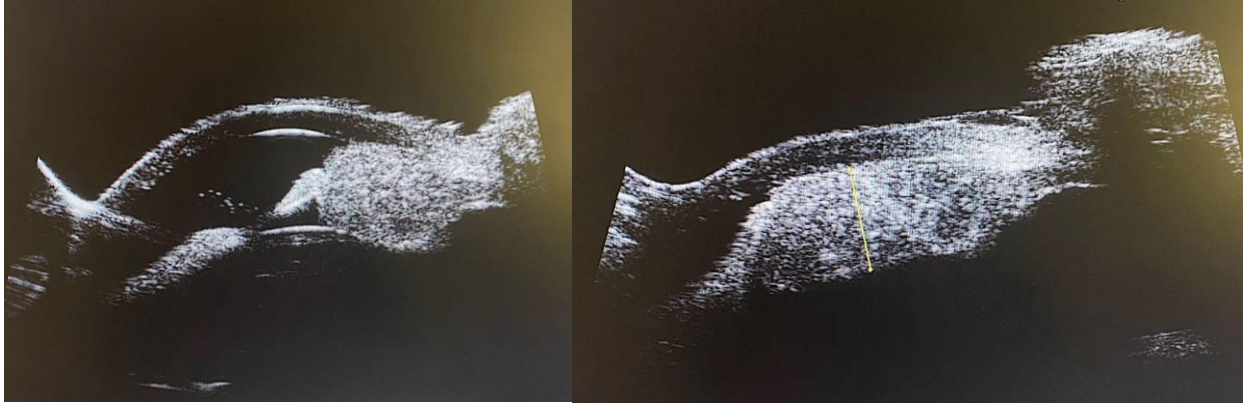


Figure 2: High frequency ultrasound of iris mass, showing an echodense, heterogenous mass with a thickness measuring 3-4 mm.

While in the emergency department, the patient received a CT chest which showed multiple pulmonary micronodules and enlarged hilar lymph nodes which elicited concern for malignancy. She received further work-up including a CT brain, MRI brain and orbits, CT abdomen and pelvis and a PET scan. In addition to the lung findings as above, the work-up was notable for a left adrenal gland nodule, lytic bone lesions in vertebrae T1 and multiple ribs, mesenteric nodules, multiple brain nodules, a left occipital bone lesion, and a soft tissue right gluteus maximus nodule (Figure 3).

Due to the high concern for malignancy with metastatic disease, the patient was taken for a biopsy with interventional radiology of the adrenal nodule. The biopsy showed metastatic adenocarcinoma consistent with primary lung carcinoma (Figure 4).

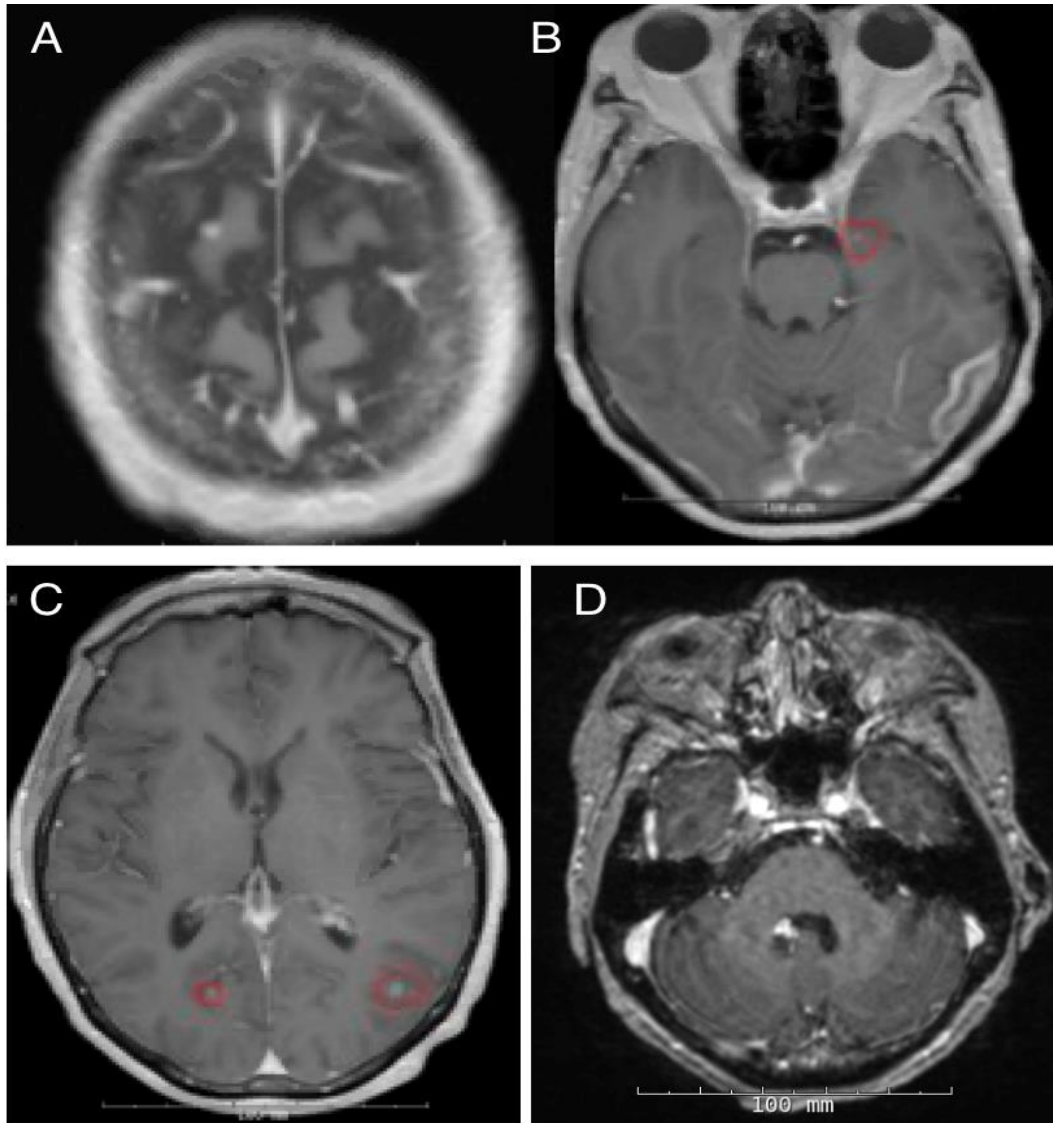


Figure 3: Multifocal metastatic brain lesions. A. Right frontal lesion. B. Left medial temporal lesion, indicated with red marker. C. Left parietal subcortical and punctate right occipital lesions, indicated with red markers. D. Right lateral fourth ventricle lesion.

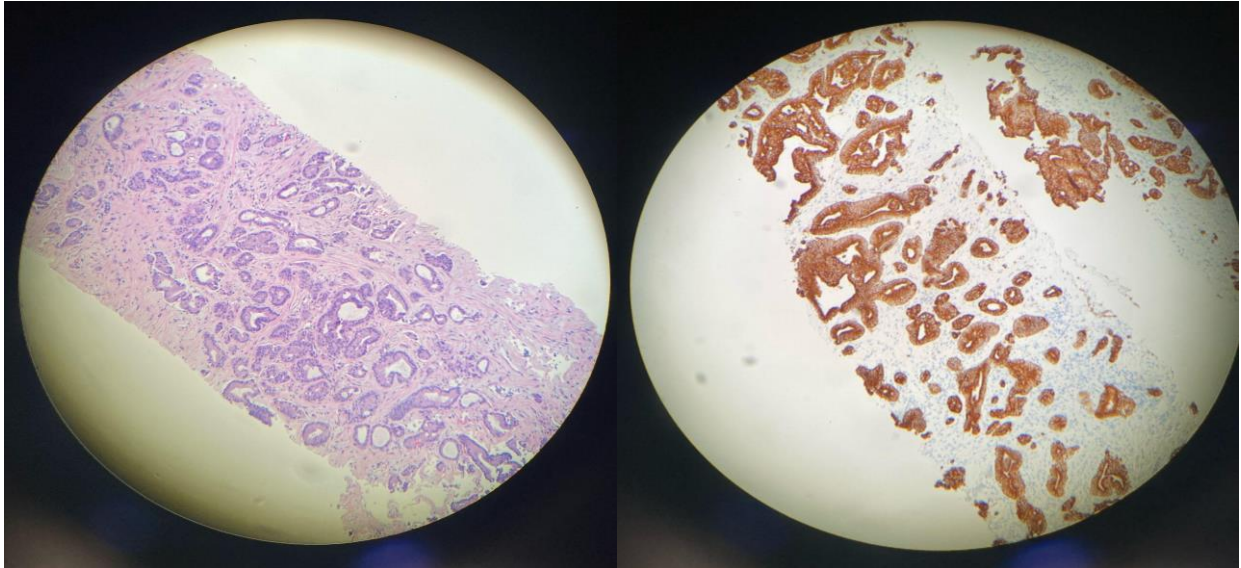


Figure 4: Left adrenal nodule biopsy: metastatic adenocarcinoma consistent with lung primary. Immunohistochemical stains positive for CK8/18, CK7, TTF-1, and Napsin A.

The patient was discharged with outpatient oncology follow up. For symptomatic relief of her ocular symptoms, we prescribed prednisolone acetate four times per day and cyclopentolate twice daily in the right eye. We also prescribed dorzolamide twice daily in the right eye to help prevent intraocular pressure spikes.

The patient followed up as an outpatient two months later. She had received one round of chemotherapy consisting of carboplatin, pemetrexed and pembrolizumab. Her iris mass had significantly reduced in size (Figure 5, Figure 6), and her symptoms of eye pain and light sensitivity had resolved. However, she had an elevated intraocular pressure of 40 mm Hg OD without neovascularization of the iris or the angle. We tapered her prednisone drops and increased her intraocular pressure drops to dorzolamide three times a day and latanoprost nightly. She will continue to receive chemotherapy and radiation and will continue to follow closely with ophthalmology as an outpatient.

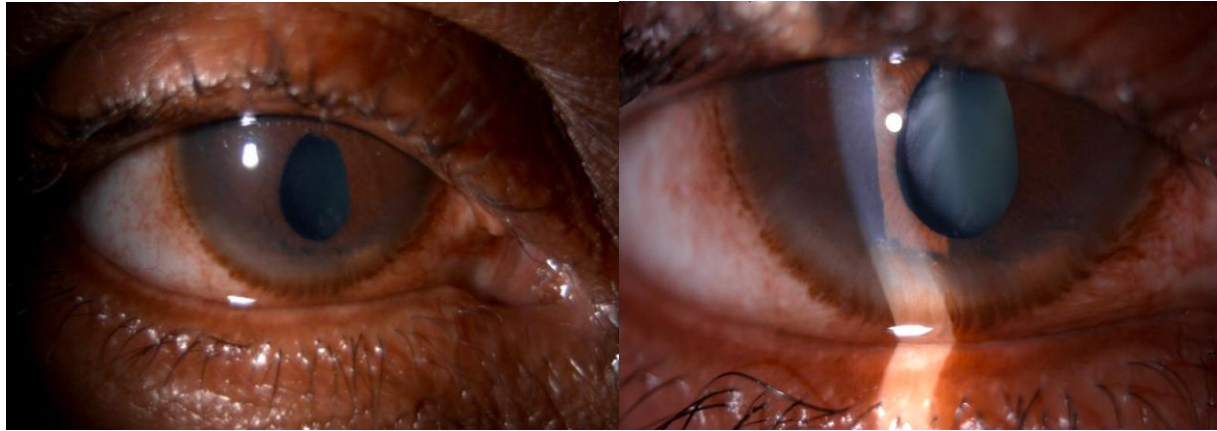


Figure 5: External photos and slit lamp photos of right iris mass after one round of chemotherapy and significant regression of the mass.



Figure 6: High frequency ultrasound of iris mass, showing an echodense, heterogenous mass with a thickness measuring 2 mm.

Discussion

Metastatic tumors are the most common intraocular tumor in adults. The choroid is most commonly involved, but metastases can involve any ocular structure, including the iris, as in our patient.¹

The most common primary tumor causing metastases to the iris is breast carcinoma, followed by lung carcinoma and cutaneous melanoma. Patients with iris metastasis often present with pain, blurred vision, or light sensitivity, but can also be asymptomatic. Lesions are most commonly unifocal and based in the iris root.¹

Among patients with primary lung cancer with uveal metastasis, the choroid is the most common location for metastasis (88%), followed by the iris (10%) and ciliary body (2%). The discovery of metastasis preceded the diagnosis of lung cancer in nearly half of patients.² There are several case reports in the literature with iris metastasis as the first presenting sign of primary lung cancer.^{3,4}

Treatment of metastatic tumors to the iris is primarily aimed at the systemic cancer, however, directed ocular treatment, including plaque radiotherapy, surgical excision, photodynamic therapy, and enucleation have been performed in a subset of patients.^{1, 5} Ocular prognosis is generally favorable, with stable visual acuity in over half of eyes one year from detection. Complications, including iris neovascularization and secondary glaucoma, occur in approximately one-third of patients.² In these patients, there are case reports of successful treatment with intravitreal bevacizumab.^{6, 7} Unfortunately, systemic prognosis in these patients is general poor, with one year mortality ranging between 54% and 87%.^{1, 2}

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