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An unusual case of a pigment epithelial cyst masquerading as a uveal melanoma after zoster ophthalmicus-related iris atrophy

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ABSTRACT

Purpose: To report the case of a 69-year-old male who was referred for a previously unidentified pigmented iris lesion with surrounding iris atrophy masquerading as an iris melanoma.

Observations: A sharply demarcated pigmented lesion extending from the trabecular meshwork to the pupillary margin was identified in the left eye. There was adjacent iris stromal atrophy. Testing was consistent with a cyst-like lesion. The patient later described a prior episode of ipsilateral herpes zoster involving the ophthalmic division of cranial nerve five.

Conclusions and Importance: Iris cysts present an uncommon iris tumor, often going unrecognized especially if located on the posterior iris surface. When they present acutely, as in this case where a previously unidentified cyst was revealed following zoster-induced sectoral iris atrophy, these pigmented lesions can be concerning for malignancy. Accurately identifying iris melanomas and differentiating them from benign iris lesions is imperative.

1. Introduction

Uveal melanomas have an estimated incidence of five per million accounting for approximately 2.7% of all melanomas. Iris melanomas are an exceedingly small subset of uveal melanoma. Distinguishing between iris melanomas and nevi can be difficult both clinically and pathologically. Other entities within the differential diagnosis include metastases, cyst of the iris pigmented epithelium, and iridocorneal endothelial syndrome.

Iris lesions often present with no symptoms and are discovered through routine eye exams. Alternatively, the patient may complain of a slowly growing pigmented lesion on the iris. Patients occasionally present with elevated intraocular pressure, which can lead to vision loss and pain.[1] Treatment depends on the clinical presentation, presumptive diagnosis, and associated complications. Observation may be the best treatment option for lesions that are small, show no signs of growth, and do not threaten vision. More aggressive tumors may require surgical resection, brachytherapy, or enucleation.

Distinguishing a benign iris cyst from more ominous lesion is essential because the prognosis and treatment options differ. There are two classifications of iris cysts, primary cysts with unknown etiology and secondary cysts acquired through trauma. Primary cysts can present similarly to orbital neoplasms and must be considered in the differential. The classifications of primary cysts include iris pigment epithelial cysts, iris stroma cysts and free floating cysts.[2] Secondary cysts are acquired through ocular trauma including post-surgical, tumor-induced, medication-induced, and systemic disorders.[2] Treatment for the cyst is dependent on the classification and associated complications but the most common procedures include laser treatment, cyst aspiration with sclerosing agent, or excision.[3] Herein, we present a most unusual case of a newly noted iris pigmented mass in a 69-year-old man.

2. Case report

A 69-year-old Caucasian man presented as a referral for evaluation of a newly noted pigmented iris mass in the left eye with a presumptive diagnosis of an iris-ciliary body melanoma. The patient's past medical history was remarkable for diabetes for which he had undergone yearly eye exams. The lesion had not been previously noted by the ophthalmologist. The patient said the lesion had been growing over the past several months. Three months prior he had been treated for herpes zoster involving the dermatomal distribution of the first division of

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cranial nerve five. He had been treated with oral valacyclovir and prednisolone acetate eye drops. He had been tapered to one drop per day at the time of the consult. He was still experiencing headaches in the left frontal regions.

The patient's visual acuity was 20/30 in each eye and both pupils were reactive without an afferent pupillary defect. His intraocular pressures were 13 mm Hg in the right eye and 16 mm Hg in the left eye. Slit-lamp examination of the right eye was remarkable only for a nuclear sclerotic cataract; the remainder of the anterior and posterior exam were normal. In the left eye, pigment was noted on the endothelium. Furthermore, overlying the iris was a sharply demarcated, darkly bilobed, pigmented mass extending from the nasal angle displacing the pupillary margin (Fig. 1). There was associated loss of the iris stromal architecture. There was no seeding of the remaining iris surface. Surprisingly, the lesion was noted to transilluminate (Fig. 2). No sectoral cataract was noted. Gonioscopy revealed the mass obscuring the angle, however, there was no circumferential extension or excessive pigmentation of the remaining angle (Fig. 3). Dilated examination showed a flat pigmented nevus in the macula and peripheral chorioretinal scars inferonasally. Ultrasound biomicroscopy (UBM) of the left eye revealed a bilobed cyst-like structure measuring 1.4 × 4.0 × 4.1 mm arising in the hyperreflective layers of the iris pigment epithelium (Fig. 4). A B-scan ultrasound showed no discrete mass in proximity to the iris lesion.

3. Discussion

Our unusual case involves a patient with a pigmented iris lesion and associated stromal atrophy arising after a recent bout of herpes zoster ophthalmicus. Pigmented iris lesions have a broad differential, but the primary considerations include iris nevi, iris melanomas, and iris pigmented cysts.[4] Iris melanoma, the most concerning differential consideration, is the least common variant of uveal melanoma, representing approximately 4–5% of cases.[5]

Iris melanomas tend to present most commonly in the inferior quadrant (45%) and frequently result in corectopia (45%), secondary glaucoma from either direct angle invasion or cellular obstruction of the trabecular meshwork (35%), ectropion uvea (24%), hyphema (3%), and extraocular extension (3%).[6,7] They can be classified as diffuse or occult.[6] Diagnosis of iris melanoma is made by a combination of clinical examination, including gonioscopy to assess angle involvement, imaging, and fine needle biopsy.[1,7] The main imaging modalities include anterior segment optical coherence tomography (AS-OCT) for smaller, anterior tumors, UBM for evaluation of posterior extension; and B-scan ultrasound for larger pigmented lesions.[1,7] Treatment options include a partial iridectomy for small lesions, radiotherapy (via either plaque or proton beam), and enucleation.[1,7]

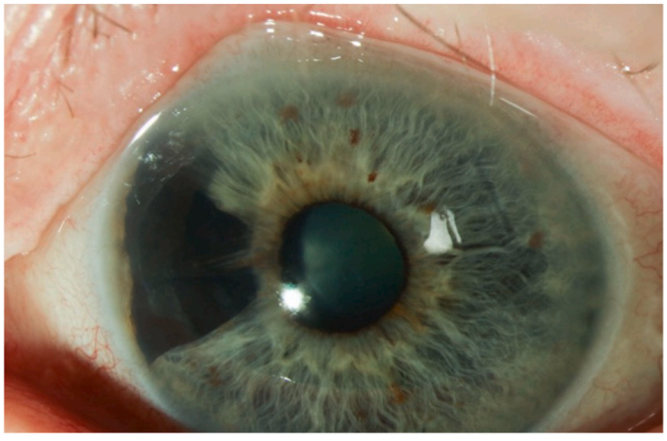

Fig. 1. Pigmented iris lesion. Slit lamp photo of darkly pigmented, bilobed epithelial iris lesion with sharply demarcated borders.

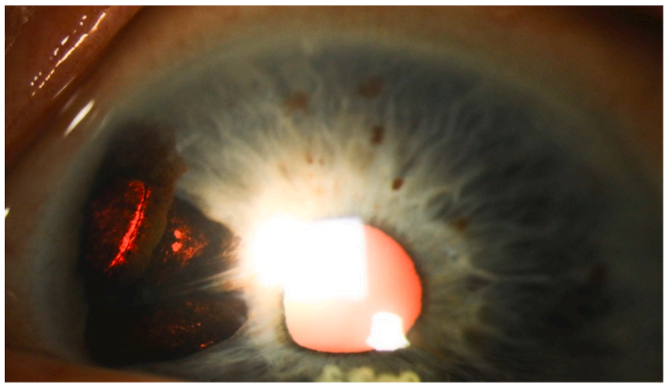

Fig. 2. Lesion Transillumination. A slit lamp view of the lesion under retroillumination revealing transillumination defects.

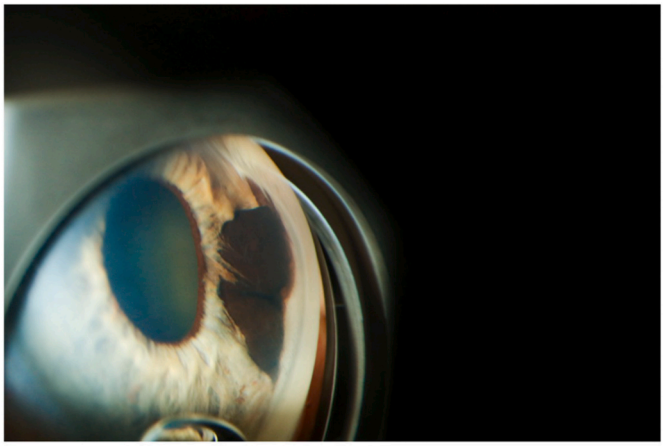

Fig. 3. Obscuration of the angle. Gonioscopic view of pigmented lesion extending to and obscuring the angle.

On evaluation, our patient presented with several findings possibly indicating iris melanoma including angle involvement, invasion of the iris stroma, and displacement of the pupillary margin. Thorough review of the patient's medical and ocular history revealed a previously undisclosed history of left-sided herpes zoster ophthalmicus approximately ten weeks prior, after which the mass appeared.

Herpes zoster ophthalmicus (HZO) is caused by reactivation of latent varicella-zoster virus (VZV) in the ophthalmic division of the fifth cranial nerve (CNV1).[8] HZO frequently presents with neuralgia followed by a vesicular eruption in the affected dermatome with subsequent ocular findings. Ocular involvement can include the conjunctiva, episclera, sclera, cornea, uvea, retina, or optic nerve.[8,9] Inflammation from VZV has been shown to induce vaso-occlusive episodes, and anterior chamber inflammation can result in vaso-occlusive iris atrophy, which presents with stromal thinning and transillumination defects.[9] Thorough evaluation of our patient's lesion, including imaging with UBM was consistent with an iris cyst rather than a neoplastic process.

The iris is the muscular, anterior portion of the uveal tract and consists of an anterior stromal layer and a posterior pigment epithelial layer.[3] Cysts of iris tissue are uncommon, representing 21% of iris lesions in a large 2012 case series by Shields et al.[10] Iris cysts can be classified as either primary, believed to be of neuroepithelial origin and without inciting etiology, or secondary if a known etiology exists.[3,11] Iris cysts can also be classified by location depending on whether they originated from the anterior stromal layer or the posterior pigmented epithelium.[3] Posterior pigmented epithelial cysts are further subclassified based on location as central, midzone, or peripheral. In

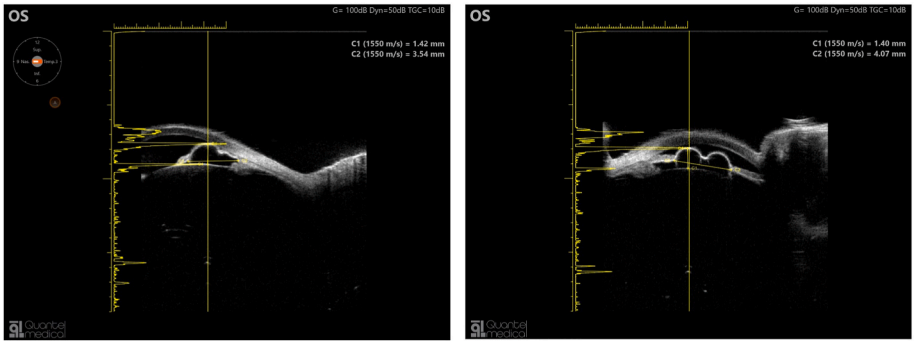

Fig. 4. 4a & 4b Ultrasonography studies. 4a: High frequency anterior segment ultrasound biomicroscopy with 1.42 × 4.53 (basal dimensions), irregularly shaped, echolucent lesion of the iris with angle involvement. 4b: High frequency anterior segment ultrasound biomicroscopy with 1.40 × 4.07 (basal dimensions), semi-circular shaped, echolucent lesion of the iris with no angle involvement.

contrast, stromal cysts are subdivided based on etiology and include uveitic, drug-induced, tumor-induced, parasitic, implantation, or systemic.[3]

In their 1984 evaluation of iris cysts, Shields et al.[11] concluded that the predominance of primary cysts tends to be stable whereas secondary cysts can occasionally result in ocular complications including visual impairment or glaucoma. Several case reports have demonstrated iris cysts masquerading as other disease processes, including primary pigmentary glaucoma.[12] Ultimately, the main challenge involved in the management of iris cysts is differentiating them from more ominous diagnoses including melanomas of the iris or ciliary body.

The available literature of iris cysts presenting as pseudomelanoma associated with herpes zoster ophthalmicus is limited. In 1990, Karlin described a case of secondary intraepithelial iris cyst developing following HZO.[13] This contrasts with our patient's presentation wherein a previously unappreciated cyst of the iris pigmented epithelium was revealed following sectoral iris atrophy due to HZO. To the best of our knowledge, we believe this represents the first case report describing this phenomenon. We recommended continued follow up for our patient as no intervention was needed.

We recommend regular examinations of pigmented iris lesions, including assessment of the angle, to monitor for change in appearance, growth, or invasion that would suggest a possible malignant transformation.

4. Conclusion

The differential for a pigmented iris lesion can include an iris nevus, iris melanoma, or iris pigmented cyst. They are often noted incidentally or after another reason prompts ophthalmic evaluation. Thorough evaluation of pigmented lesions, including examination and appropriate imaging modalities, is appropriate to rule out neoplastic processes. This is especially prudent in the setting of confounding examination findings, such as iris atrophy in the setting of HZO as demonstrated in this case. Routine follow up of pigmented lesions is recommended to monitor for changes.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could result in patient identification.

Declaration of competing interest

None for all authors.

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All authors attest that they meet the current ICMJE criteria for Authorship. Internal Review Board (IRB) approval was deemed not necessary by the IRB as the research is not generalizable.

References

1. Shields CL, Shields JA. Ocular melanoma: relatively rare but requiring respect. *Clin Dermatol*. 2009;27(1):122–133. https://doi.org/10.1016/J.CLINDERMATOL.2008.09.010.
2. Rao A, Gupta V, Bhadange Y, Sharma R, Shields JA. Iris cysts: a review. *Semin Ophthalmol*. 2011;26(1):11–22. https://doi.org/10.3109/08820538.2010.541319.
3. Georgalas I, Petrou P, Papaconstantinou D, Brouzas D, Koutsandrea C, Kanakis M. Iris cysts: a comprehensive review on diagnosis and treatment. *Surv Ophthalmol*. 2018;63(3):347–364. https://doi.org/10.1016/J.SURVOPHTHAL.2017.08.009.
4. Mor JM, Koch KR, Heindl LM. Diagnosis and therapy of Iris lesions. *Klin Monbl Augenheilkd*. 2017;234(12):1541–1554. https://doi.org/10.1055/S-0043-120093.
5. Conway RM, Chua WCT, Qureshi C, Billson FA. Primary iris melanoma: diagnostic features and outcome of conservative surgical treatment. *Br J Ophthalmol*. 2001;85(7):848–854. https://doi.org/10.1136/BJO.85.7.848.
6. Shields CL, Kaliki S, Shah SU, Luo W, Furuta M, Shields JA. Iris melanoma: features and prognosis in 317 children and adults. *Journal of AAPOS*. 2012;16(1):10–16. https://doi.org/10.1016/J.JAAPOS.2011.10.012.
7. Kaliki S, Shields CL. Uveal melanoma: relatively rare but deadly cancer, 2017 31:2 *Eye*. 2016;31(2):241–257. https://doi.org/10.1038/eye.2016.275.
8. Liesegang TJ. Herpes zoster ophthalmicus. Natural history, risk factors, clinical presentation, and morbidity. *Ophthalmology*. 2008;115(2 suppl L). https://doi.org/10.1016/J.OPHTHA.2007.10.009.
9. Davis AR, Sheppard J. Herpes zoster ophthalmicus review and prevention. *Eye Contact Lens*. 2019;45(5):286–291. https://doi.org/10.1097/ICL.0000000000000591.
10. Shields CL, Kancherla S, Patel J, et al. Clinical survey of 3680 iris tumors based on patient age at presentation. *Ophthalmology*. 2012;119(2):407–414. https://doi.org/10.1016/J.OPHTHA.2011.07.059.
11. Shields JA, Kline MW, Augsburger JJ. Primary iris cysts: a review of the literature and report of 62 cases. *Br J Ophthalmol*. 1984;68(3):152–166. https://doi.org/10.1136/BJO.68.3.152.
12. Harpster SN, Flettner JG, Mick AB. Case report: sequelae of bilateral Iris pigment epithelial cysts masquerading as primary pigmentary glaucoma. *Optom Vis Sci*. 2019;96(1):71–75. https://doi.org/10.1097/OPX.0000000000001323.
13. Karlin JD. Herpes zoster ophthalmicus and Iris cysts. *Ann Ophthalmol*. 1990;22(11):414–415.