

Ciliary Body Metastasis from Lung Cancer Presenting as Acute Angle- Closure Glaucoma: Two Case Reports

Xue-Ting Pei

drpeixueting@126.com

Beijing Tongren Eye Center, Capital Medical University

Jing-Ling Zou

Beijing Tongren Eye Center, Capital Medical University

Yue-Ming Liu

Beijing Tongren Eye Center, Capital Medical University

Case Report

Keywords: ciliary body metastasis, lung cancer, secondary angle-closure glaucoma, ultrasound biomicroscopy, intraocular metastasis

Posted Date: October 14th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10977652/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Background

Ciliary body metastasis is an uncommon form of uveal metastasis that may present with secondary angle-closure glaucoma. Because these lesions are concealed behind the iris, diagnosis is often delayed, and the condition may be mistaken for primary acute angle-closure glaucoma.

Case Presentation:

We report two patients with ciliary body metastasis from lung cancer who initially presented with acute angle-closure glaucoma. Case 1, a 63-year-old woman with a known history of lung cancer receiving targeted therapy, developed acute ocular pain, visual loss, and markedly elevated intraocular pressure. Poor response to conventional antiglaucoma therapy prompted further investigation, and ultrasound biomicroscopy (UBM) revealed a ciliary body mass associated with angle closure. Case 2, a 66-year-old woman with a history of hemoptysis but no known history of malignancy, presented with blurred vision, ocular pain, and elevated intraocular pressure. UBM demonstrated a larger ciliary body mass involving the anterior chamber angle. Subsequent systemic evaluation revealed previously undiagnosed metastatic lung cancer. In both cases, the clinical presentation closely resembled primary acute angle-closure glaucoma; however, atypical findings and poor response to treatment prompted further investigation.

Conclusion

Ciliary body metastasis may initially present as an acute glaucoma attack and should be distinguished from primary acute angle-closure glaucoma. Multiple gray-white nodules on the iris surface may indicate an occult intraocular tumor. Elevated intraocular pressure can result from tumor-related angle closure and/or obstruction of the trabecular meshwork by disseminated tumor cells. UBM is valuable for detecting occult ciliary body lesions. Because conventional pressure-lowering treatment may be ineffective, incisional intraocular surgery is not recommended when an intraocular malignancy is suspected.

Introduction

Uveal metastasis is the most common intraocular malignancy in adults and is most frequently associated with breast and lung cancers[1]. Although the choroid is the predominant site of involvement, ciliary body metastasis is uncommon, accounting for approximately 2% of uveal metastatic lesions[2]. Owing to its hidden anatomical location posterior to the iris, ciliary body metastasis may remain clinically occult until secondary ocular complications develop.

One important but underrecognized manifestation is secondary angle-closure glaucoma. It has been reported that tumor growth within the ciliary body can cause anterior displacement of the iris–lens diaphragm, resulting in angle closure, elevated intraocular pressure, corneal edema, and ocular pain[3]. These features may closely mimic primary acute angle-closure glaucoma and lead to delayed diagnosis. Tumor-related secondary angle closure may closely mimic primary acute angle-closure glaucoma, potentially leading to delayed diagnosis. Ultrasound biomicroscopy (UBM) plays a pivotal role in detecting these occult ciliary body lesions and facilitating accurate diagnosis[4]. Failure to recognize an intraocular malignancy may lead to inappropriate glaucoma procedures and delay the diagnosis of systemic metastatic disease.

Here, we report two patients who initially presented with acute angle-closure glaucoma and were subsequently found to have ciliary body metastases originating from lung carcinoma. Written informed consent was obtained from the patient for publication of the clinical details and images/videos included in this manuscript. These cases highlight the diagnostic value of UBM and emphasize the importance of considering occult intraocular malignancy in patients with atypical or treatment-refractory angle-closure glaucoma. Clinicians should be aware that the presence of multiple gray-white nodules on the iris surface is a clinical sign that should raise suspicion of an occult intraocular mass. The present retrospective case report was approved by the institutional review board of Beijing Tongren Hospital, and was conducted at the Eye Center of Beijing Tongren Hospital, in accordance with the tenets of the Declaration of Helsinki.

Case 1

Chief Complaints

A 63-year-old woman presented to the emergency department of our ophthalmology department in November 2025 with complaints of left ocular pain and decreased vision for 1 day. The clinical course of Case 1 is summarized in Table 1.

Table 1
Timeline for Case 1.

Date	Event
Admission	Symptom onset including left eye pain and decreased vision
Day 1	Emergency ophthalmic evaluation; initial diagnosis of acute glaucoma attack
Day 1	Initiation of medical therapy
1 week later	Persistent elevation of IOP despite treatment
1 week later	UBM identifying an occult ciliary body mass
After UBM	Lung cancer history review and PET-CT staging
Thereafter	Oncology consultation; clinical diagnosis revised to secondary angle-closure glaucoma caused by suspected ciliary body metastasis
3 months	Transscleral cyclophotocoagulation and systemic chemotherapy; at 3 months, left eye blindness and a contralateral choroidal mass
IOP, intraocular pressure; PET-CT, positron emission tomography-computed tomography; UBM, ultrasound biomicroscopy	

Medical History

The patient had a history of lung adenocarcinoma and was receiving targeted therapy. The targeted therapy had achieved good disease control, and her systemic disease was considered stable without detected metastatic lesions.

Physical Examination

On admission, the best-corrected visual acuity was 0.5 in the right eye and 0.4 in the left eye. The intraocular pressure was 14.6 mmHg in the right eye and 55.1 mmHg in the left eye. Slit-lamp examination of the right eye revealed a clear cornea, deep anterior chamber, round pupil, and transparent lens. Examination of the left eye showed diffuse corneal edema, a deep anterior chamber, a mid-dilated pupil, a strongly positive Tyndall sign, and lens opacity. Multiple gray-white nodular lesions were observed at the pupillary margin and on the iris surface of the left eye (Fig. 1A 1B). Fundus examination demonstrated a cup-to-disc ratio of 0.6 in the right eye and 0.7 in the left eye. Gonioscopic examination showed closure of the inferior anterior chamber angle in the left eye, while the remaining angle structures were visible.

Imaging

UBM demonstrated peripheral iris bulging and an irregular hypoechoic lesion in the ciliary body at the 5:30–6:30 o'clock position in the left eye, measuring approximately $2.5 \times 1.62 \times 1.16$ mm (Fig. 1C). The lesion exhibited poorly defined margins, heterogeneous internal reflectivity, and an indistinct interface with the sclera, suggestive of infiltrative ciliary body involvement. Head computed tomography (CT) revealed no additional abnormalities or metastatic lesions, which was supported by positron emission tomography-CT (PET-CT) showing no abnormal hypermetabolism in the ciliary body region and no other sites of metastasis.

Diagnosis

In the emergency department, the patient was initially diagnosed with acute angle-closure glaucoma in the left eye. Treatment with intravenous mannitol, oral acetazolamide, topical intraocular pressure-lowering medications, and anti-inflammatory therapy was initiated. Despite treatment, the visual acuity of the left eye continued to decline and the intraocular pressure remained poorly controlled. After 1 week, visual acuity decreased to 0.06 and the intraocular pressure was 43.9 mmHg. Because the central anterior chamber remained deep—an atypical finding for primary acute angle-closure glaucoma—and given the patient's history of lung adenocarcinoma, expedited ophthalmic and systemic examinations were performed.

The lack of hypermetabolism on PET-CT was considered an important negative finding that does not rule out metastasis given the small tumor size. Based on the UBM findings and the patient's oncologic history, the diagnosis was revised from acute angle-closure glaucoma to secondary angle-closure glaucoma caused by suspected ciliary body metastasis from lung adenocarcinoma. No ocular biopsy was performed due to concerns regarding tumor dissemination; therefore, the diagnosis was established based on the clinical and imaging findings.

Treatment

Because ciliary body metastasis was suspected and invasive procedures carry a risk of tumor dissemination, ocular biopsy and filtering surgery, including trabeculectomy, were not performed. Transscleral cyclophotocoagulation was performed to reduce intraocular pressure and relieve ocular pain. The patient subsequently received systemic chemotherapy for lung cancer.

Outcomes and Follow-up

At the 3-month follow-up, the left eye had progressed to blindness, and a new choroidal mass detected in the contralateral eye was considered metastatic. Multiple new systemic metastatic lesions were subsequently identified. At the latest follow-up, the patient was receiving systemic chemotherapy.

Case 2

Chief Complaints

A 66-year-old woman presented to the emergency department of our ophthalmology department in February 2026 with blurred vision and ocular pain in the right eye of 1-week duration. The clinical course of Case 2 is summarized in Table 2.

Table 2
Timeline for Case 2.

Date	Event
Admission	Presenting symptoms of right ocular pain, decreased vision, and dizziness
1 week later	Emergency ophthalmic evaluation; initial diagnosis of acute angle-closure glaucoma
Day 1	Initiation of medical therapy
After initial exam	UBM evaluation identifying a ciliary body mass
After UBM	History of hemoptysis reported; initiation of systemic evaluation
After staging	Lung cancer with multiple metastases confirmed
Thereafter	Diagnosis revised to secondary angle-closure glaucoma caused by metastatic ciliary body tumor; patient transferred to respiratory medicine department for systemic chemotherapy
UBM, ultrasound biomicroscopy	

Medical History

The patient denied any history of ocular trauma, previous ocular surgery, systemic malignancy, or other significant systemic diseases. At presentation, no respiratory symptoms were initially reported. However, subsequent detailed history taking revealed recent episodes of hemoptysis, which prompted further systemic investigation.

Physical Examination

On admission, the visual acuity was 0.2 in the right eye and 0.8 in the left eye. The intraocular pressure was markedly elevated in the right eye (43.0 mmHg) compared with the left eye (17.4 mmHg). Slit-lamp examination of the right eye revealed conjunctival hyperemia, corneal edema, a shallow anterior chamber, and a mildly dilated oval pupil, which were consistent with acute angle closure. Lens opacity was also present, and suspicious gray-white nodules were observed on the inferior iris surface (Fig. 2A). In contrast, the left eye exhibited a clear cornea, a moderately deep anterior chamber, a round 3-mm pupil, mild anterior chamber inflammation (Tyndall positive), and lens opacity. Fundus examination showed cup-to-disc ratios of 0.4 and 0.3 in the right and left eyes, respectively.

Imaging

Despite intraocular pressure-lowering treatment, the intraocular pressure remained poorly controlled. Slit-lamp examination revealed a suspicious grayish-white nodule on the inferior surface of the iris. Therefore, UBM was performed, which revealed a hemispherical solid ciliary body mass extending from the 6:00 to 8:30 o'clock position in the right eye, measuring approximately $6.26 \times 5.47 \times 2.02$ mm (Fig. 2B). The lesion involved the anterior chamber angle, demonstrated heterogeneous internal reflectivity with focal medium-to-high echoes and posterior acoustic shadowing, and displaced the crystalline lens superiorly.

The presence of this intraocular mass prompted a more detailed medical history, which revealed recent episodes of hemoptysis that had not been initially reported by the patient. These findings prompted further systemic evaluation. Chest CT demonstrated a cavitary lesion in the lung with surrounding parenchymal abnormalities, raising suspicion of primary pulmonary malignancy (Fig. 2C). Subsequent PET-CT revealed hypermetabolic pulmonary lesions with evidence of multiple metastatic foci, suggesting advanced-stage lung cancer.

Cytological Examination

Cytological examination of the pleural effusion revealed malignant cells, supporting the diagnosis of metastatic malignancy.

Diagnosis

The final diagnosis was secondary angle-closure glaucoma of the right eye caused by a ciliary body mass. No ocular biopsy was performed; however, pleural effusion cytology revealed malignant cells. Based on the cytological and the systemic imaging findings, the ciliary body mass was considered clinically consistent with metastatic involvement from primary lung carcinoma.

Treatment

Upon transfer to the respiratory medicine department, the patient received systemic chemotherapy.

Outcomes and Follow-up

At the latest available follow-up, systemic chemotherapy was ongoing; no additional ophthalmic outcome data were available.

Discussion

We report two patients with ciliary body metastases presenting as secondary angle-closure glaucoma. Despite different oncologic backgrounds, both cases were initially suspected to have primary glaucoma and were ultimately diagnosed only after UBM revealed occult ciliary body masses. These cases highlight the diagnostic challenge posed by ciliary body metastasis and emphasize the importance of considering intraocular malignancy in atypical or treatment-refractory glaucoma.

The diagnostic challenge of ciliary body metastasis is largely attributable to its location behind the iris, which may limit direct visualization on routine slit-lamp examination[5]. Consequently, patients often present with secondary manifestations such as elevated intraocular pressure, ocular pain, corneal edema, or angle closure rather than an obvious intraocular mass, closely mimicking primary acute angle-closure glaucoma[6, 7]. Both cases demonstrate how an intraocular tumor can be initially misdiagnosed as glaucoma, highlighting several clinical features that should raise suspicion for a secondary cause of angle closure. Tumor-related glaucoma should be considered in patients with unilateral or refractory glaucoma, particularly when the clinical course is atypical or the intraocular pressure responds poorly to conventional therapy. Because ciliary body lesions are located behind the iris and are often difficult to visualize on routine examination, UBM is particularly valuable for detecting occult lesions and identifying the underlying mechanism of angle closure[8, 9].

In both patients, UBM proved crucial for establishing the correct diagnosis where routine anterior segment examination demonstrated angle closure and elevated intraocular pressure but failed to reveal the underlying cause. UBM identified occult ciliary body masses that were hidden behind the iris and not visible on slit-lamp examination[9]. In Case 1, the deep central anterior chamber—despite partial gonioscopic angle closure and marked anterior chamber inflammation—was atypical for primary acute angle closure. The acute attack may have resulted from tumor growth causing focal mechanical angle closure and/or disseminated tumor cells obstructing the angle. UBM revealed an irregular hypoechoic lesion involving the ciliary body with associated angle closure. In contrast, UBM in Case 2 detected a solid ciliary body mass extending toward the iridocorneal angle, causing anterior displacement of the iris–lens diaphragm. These findings explained the atypical clinical presentation and redirected the diagnostic workup away from primary glaucoma. Our cases further support the role of UBM as the imaging modality of choice in patients with unilateral, atypical, or treatment-refractory angle-closure glaucoma.

The systemic implications of these findings are equally important. Lung cancer is one of the most common primary malignancies associated with uveal metastasis, second only to breast cancer[8, 10]. Ocular metastasis may occur either as the first manifestation of an undiagnosed malignancy or as a sign of disease progression in patients with a known cancer history. Our two cases illustrate both scenarios. In Case 2, ocular symptoms prompted further systemic investigation, ultimately leading to the diagnosis of metastatic lung cancer. In contrast, Case 1 developed ciliary body metastasis despite a previously established diagnosis of lung cancer and ongoing targeted therapy. These observations emphasize that ocular metastasis does not always correlate with the apparent stability of systemic disease, highlighting the critical role that ophthalmologists play in identifying occult or progressive malignancies. Therefore, a history of cancer should always raise suspicion when evaluating patients with atypical glaucoma presentations.

Management of glaucoma secondary to ciliary body metastasis differs fundamentally from that of primary glaucoma. Because elevated intraocular pressure results from tumor-related mechanical obstruction, conventional glaucoma surgery may not address the underlying cause. More importantly,

filtering procedures such as trabeculectomy are generally avoided in eyes with active intraocular tumors because of the potential risk of extraocular tumor dissemination. Treatment should therefore focus primarily on the underlying malignancy while providing adequate intraocular pressure control. Initial management usually consists of topical and systemic antiglaucoma medications. When medical therapy is insufficient, cyclodestructive procedures such as transscleral cyclophotocoagulation may be considered because they reduce aqueous production without creating a full-thickness scleral fistula. Early recognition of the metastatic nature of the disease is essential to guide appropriate ophthalmic and oncologic management.

Conclusion

Ciliary body metastasis can cause secondary angle-closure glaucoma through tumor-related mechanical angle closure or obstruction of the angle by disseminated tumor cells. This pathology may initially present as an acute glaucoma attack before a systemic malignancy is recognized, or it may occur despite apparently stable systemic disease during targeted therapy. Multiple gray-white nodules on the iris surface may represent metastatic deposits and should prompt evaluation for an underlying ciliary body tumor. Because this secondary ocular disease may respond poorly to conventional treatment and progress rapidly, early recognition and UBM evaluation are essential to avoid inappropriate interventions and ensure timely oncological management.

Declarations

Ethics approval and consent to participate

The present retrospective study was approved by the institutional review board of Beijing Tongren Hospital, and was conducted at the Eye Center of Beijing Tongren Hospital, in accordance with the tenets of the Declaration of Helsinki. A written informed consent was obtained from two patients.

Consent for publication

Written informed consent was obtained from the patients for publication of this two-case report and accompanying images.

Authors' contributions

XT Pei: Case provision, case diagnosis, report drafting; JL Zou: Data curation; YM Liu: Confirmation of lung cancer diagnosis; XT Pei had primary responsibility for final content; All authors read and approved the final version of the manuscript.

Availability of Data and Materials

All data generated or analyzed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.

Funding

No funding was received for conducting this study or for the publication of this manuscript.

Acknowledgements

Not applicable.

References

1. Li H, Luo J, Feng Z, Maberley D, Li Y, Wei W, Liu Y. Uveal metastasis: clinical characteristics, treatment, and prognostic factors in a cohort of 161 patients in China. *Can J Ophthalmol*. 2025;60(4):e578–88.
2. Shah SU, Mashayekhi A, Shields CL, Walia HS, Hubbard GB III, Zhang J, Shields JA. Uveal Metastasis from Lung Cancer: Clinical, Features, Treatment, and Outcome in 194 Patients. *Ophthalmology*. 2014;121(1):352–7.
3. Parivadhini A, Lingam V. Management of Secondary Angle Closure Glaucoma. *J Curr Glaucoma Pract*. 2014;8(1):25–32.
4. Thariat J, Boudin L, Loria O, Nguyen AM, Kodjikian L, Mathis T. How to Manage a Patient with Ocular Metastases? *Biomedicines* 2022, 10(12):3044.
5. Warjri GB, Senthil S. Imaging of the Ciliary Body: A Major Review. *Semin Ophthalmol*. 2022;37(6):711–23.
6. F Z. Metastatic tumor of the ciliary body manifesting as phacomorphic glaucoma: A clinical case. *J Clin Med Kaz*. 2022;19(3):69–72.
7. Mansuri F, Patel NB, Aggarwal S. A Rare Case of Ciliary Body Melanoma Masquerading as Secondary Angle Closure Glaucoma. *J Evid Based Med Healthc*. 2020;7(37):2074–7.
8. Camp DA, Yadav P, Dalvin LA, Shields CL. Glaucoma secondary to intraocular tumors: mechanisms and management. *Curr Opin Ophthalmol*. 2019;30(2):71–81.
9. Fernández-Vigo JI, Kudsieh B, Shi H, De-Pablo-Gómez-de-Liaño L, Fernández-Vigo J, García-Feijóo J. Diagnostic imaging of the ciliary body: Technologies, outcomes, and future perspectives. *Eur J Ophthalmol*. 2022;32(1):75–88.
10. Shields CL, Welch RJ, Malik K, Acaba-Berrocal LA, Selzer EB, Newman JH, Mayro EL, Constantinescu AB, Spencer MA, McGarrey MP, et al. Uveal Metastasis: Clinical Features and Survival Outcome of 2214 Tumors in 1111 Patients Based on Primary Tumor Origin. *Middle East Afr J Ophthalmol*. 2018;25(2):81–90.

Figures

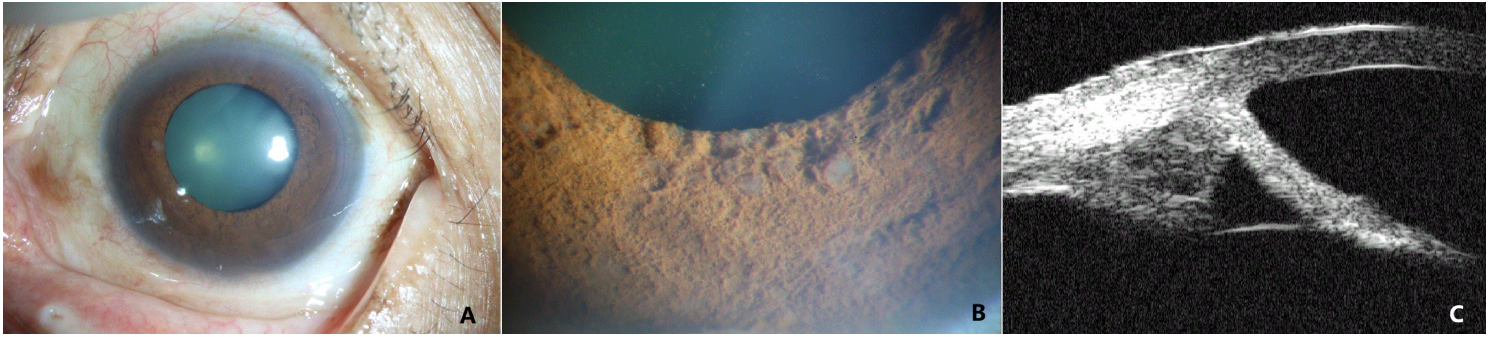


Figure 1

Clinical findings in Case 1. (A) Anterior segment photograph of the right eye. (B) Magnified slit-lamp image showing multiple disseminated gray-white round nodules predominantly involving the inferior iris, with white dust-like cells in the aqueous humor (aqueous flare). (C) UBM demonstrating a ciliary body mass at the corresponding location with indistinct margins and angle closure. UBM, Ultrasound biomicroscopy

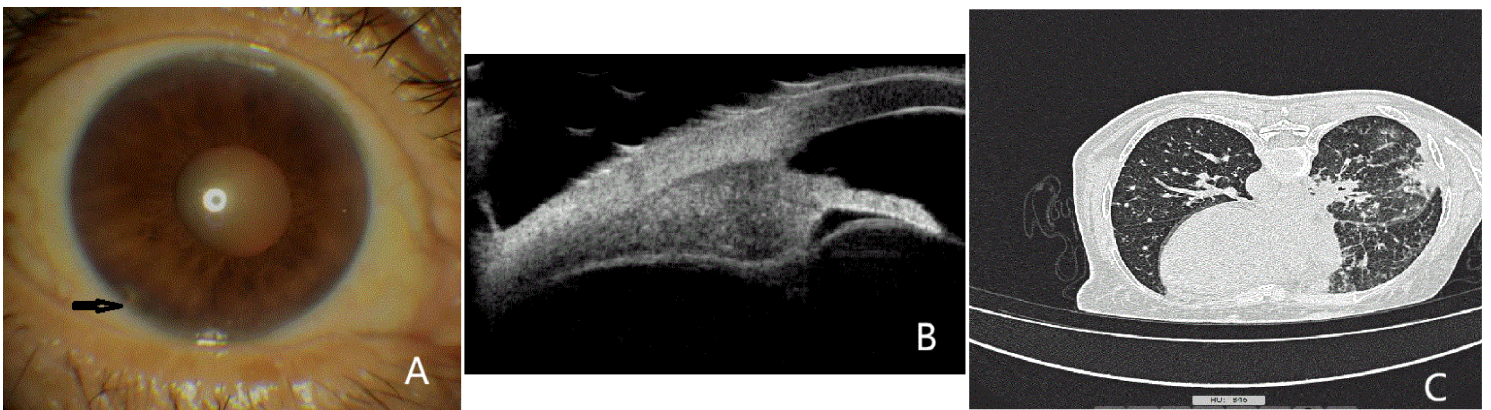


Figure 2

Clinical findings in Case 2. (A) Anterior segment photograph showing gray-white nodules on the inferior iris (arrow). (B) UBM demonstrating a ciliary body mass at the corresponding location with indistinct margins and angle closure. (C) Chest CT showing hilar parenchymal patchy opacities and numerous diffusely distributed tiny miliary nodules throughout both lungs. CT, computed tomography; UBM, Ultrasound biomicroscopy