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Phacolytic Glaucoma With Milky Aqueous Humor: A Case Report

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Abstract

Phacolytic glaucoma is a rare lens-induced secondary glaucoma that usually occurs with an intact lens capsule. We report an unusual presentation resulting from spontaneous disruption of the anterior lens capsule in a hypermature cataract. A 65-year-old man presented with a four-day history of ocular pain and severe visual deterioration in the left eye. Visual acuity was reduced to light perception, and intraocular pressure (IOP) was 40 mmHg. Slit-lamp examination revealed corneal edema and a deep anterior chamber with turbid, milky aqueous humor. Ultrasound biomicroscopy (UBM) demonstrated a hypermature cataractous lens and a focal defect in the anterior lens capsule. Extracapsular cataract extraction was performed. Cytological analysis of the anterior segment aspirate revealed numerous macrophages containing phagocytosed lens crystallin material. Postoperatively, best-corrected visual acuity improved to 1/10, limited by advanced glaucomatous optic neuropathy. Phacolytic glaucoma can present with milky aqueous humor mimicking infectious endophthalmitis. Anterior segment imaging, including UBM, is critical for identifying capsular disruption and guiding prompt surgical intervention to prevent irreversible visual loss.

Categories: Ophthalmology
Keywords: aqueous humor, cataract, glaucoma, intraocular pressure, ultrasound biomicroscopy

Introduction

Phacolytic glaucoma is a lens-induced secondary open-angle glaucoma that typically develops in association with a hypermature cataract [1,2]. The underlying pathophysiological mechanism involves the leakage of soluble lens proteins into the anterior chamber through an intact or micro-disrupted lens capsule [1,3,4]. These proteins, along with macrophages, obstruct the trabecular meshwork, resulting in a rapid surge in intraocular pressure (IOP) [1,3,4].

We report a rare case of phacolytic glaucoma characterized by spontaneous anterior lens capsule rupture, presenting with profound corneal edema, severely elevated IOP, and pronounced milky turbidity of the aqueous humor [2].

Case Presentation

Initial evaluation

A 65-year-old man was evaluated for a four-day history of severe ocular pain and sudden vision loss in his left eye. On initial torchlight examination, diffuse corneal opacity obscured the anterior segment details (Figure *1*). Visual acuity was light perception in the left eye, while the fellow pseudophakic right eye had a best-corrected visual acuity (BCVA) of 10/10. Marked conjunctival hyperemia and corneal edema were present in the left eye without adnexal involvement. IOP was 40 mmHg in the left eye and 16 mmHg in the right eye.

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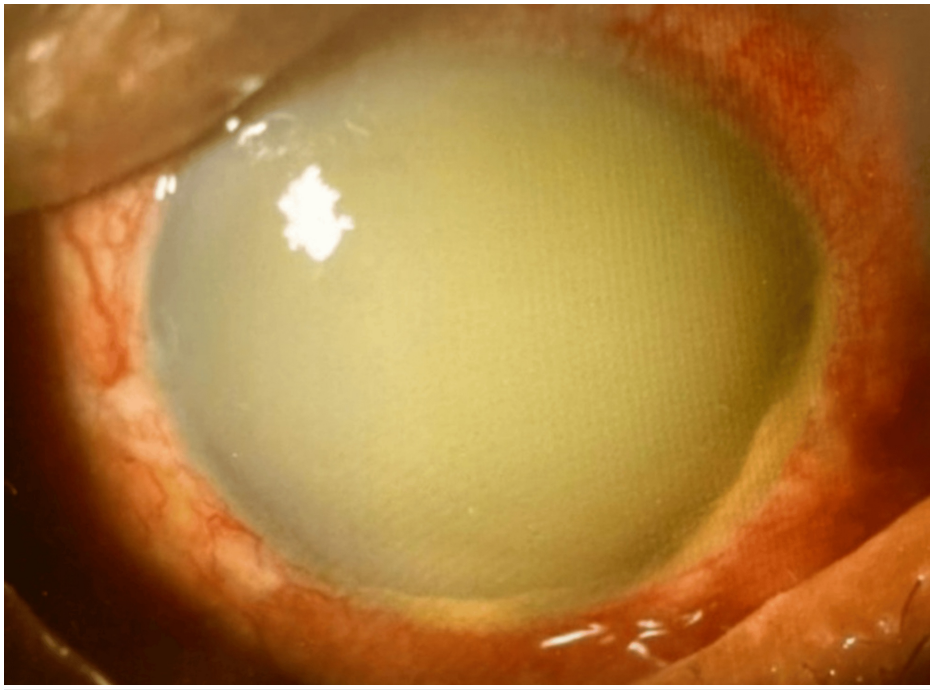


FIGURE 1: Slit-lamp examination showing lactescent aqueous humor

Slit-lamp photograph of the left eye demonstrating severe corneal edema and an anterior chamber filled with turbid, lactescent (milky) aqueous humor.

Diagnostic workup

Following initial medical lowering of IOP and clearing of corneal edema, slit-lamp biomicroscopy revealed a deep anterior chamber filled with dense, whitish, proteinaceous particles suspended in the aqueous humor. B-scan ultrasonography showed an optically clear vitreous, an attached retina, and marked optic nerve head cupping in the left eye. The right eye demonstrated a normal optic disc with a cup-to-disc ratio of 0.3.

Ultrasound biomicroscopy (UBM) was performed, confirming a deep anterior chamber, a dense hypermature lens with a lax capsule, and multiple hyper-reflective echoes anterior to the pupil. A focal rupture of the anterior lens capsule was identified (Figure *2*).

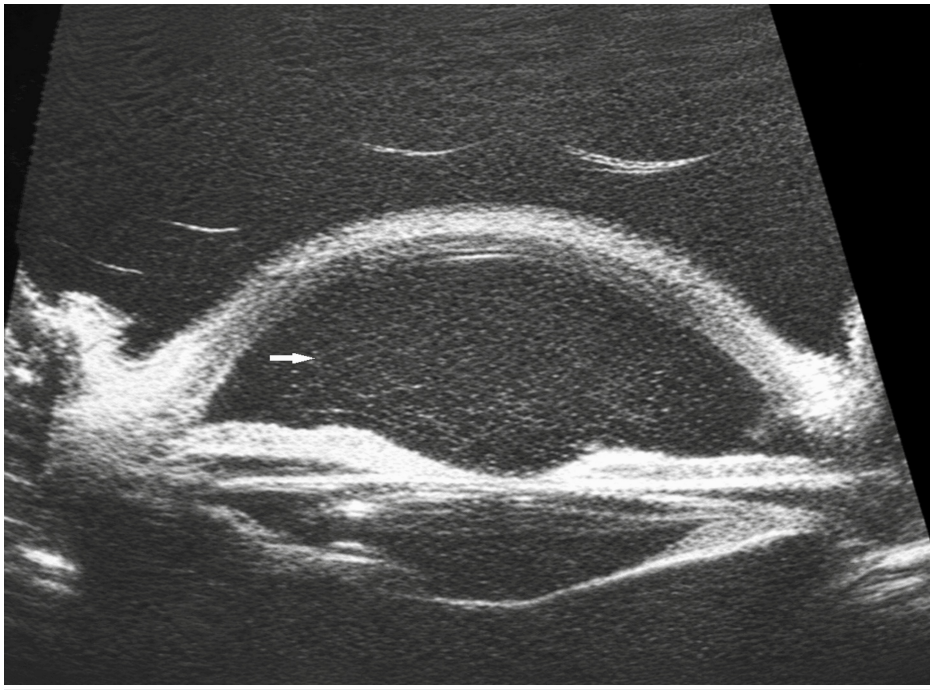


FIGURE 2: Ocular UBM showing echoes in the anterior chamber

UBM scan of the left eye showing echoes in the anterior chamber, suggestive of cortical material leakage (arrow), and a cataract with a lax capsular bag.

UBM, ultrasound biomicroscopy.

Therapeutic intervention and cytology

Initial management included intensive topical and systemic IOP-lowering therapy. Once IOP stabilized, manual extracapsular cataract extraction (ECCE) with IOL implantation was performed. Intraoperatively, aspiration of the milky material from the anterior chamber exposed the underlying hypermature lens. Staining with trypan blue delineated the anterior capsular defect, allowing safe manual lens extraction.

Cytopathologic analysis of the aspirated aqueous humor confirmed numerous macrophages containing phagocytosed lens crystallin proteins, corroborating the diagnosis of phacolytic glaucoma.

Outcome

Postoperatively, intraocular inflammation resolved gradually, and IOP was successfully controlled (Figure *3*). However, BCVA remained limited at 1/10 due to pre-existing, advanced glaucomatous optic atrophy.

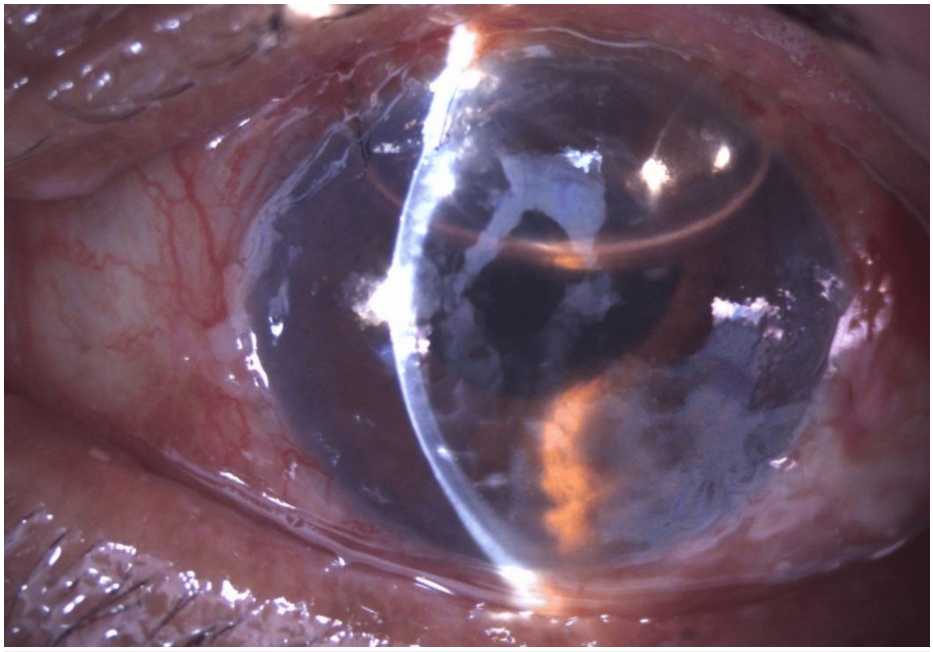


FIGURE 3: Postoperative appearance of the left eye on day 1

Postoperative day 1 slit-lamp photograph of the left eye demonstrating a clear cornea and a well-formed anterior chamber following extracapsular cataract extraction.

Discussion

Hypermature cataracts represent an advanced degenerative stage where liquefied cortical material surrounds a dense nucleus. Delaying surgical intervention increases the risk of sight-threatening inflammatory complications, including phacolytic glaucoma and phacoantigenic uveitis [1].

While classic phacolytic glaucoma involves microscopic protein leakage through a macroscopically intact capsule, spontaneous macro-disruption of the anterior lens capsule, as observed in our patient, provides a direct pathway for mass cortical release into the anterior chamber [2-4]. This massive influx produces a dense, milky aqueous humor that can clinically simulate infectious endophthalmitis or lens particle glaucoma [5].

Prompt surgical extraction of the causative lens is the definitive treatment [1,3,4]. Preoperative medical stabilization of IOP is imperative to minimize intraoperative risks such as suprachoroidal hemorrhage or posterior capsule rupture [1,4]. In resource-limited settings or cases with compromised zonular integrity, manual ECCE or small-incision cataract surgery (SICS) serves as a safer alternative to phacoemulsification [1,4].

Even after successful surgery and IOP normalization, visual prognosis in long-standing phacolytic glaucoma remains guarded due to irreversible optic nerve damage [1,3,4].

Conclusions

Phacolytic glaucoma must be considered in patients presenting with a painful red eye, high IOP, and milky anterior chamber reaction in the setting of an advanced cataract. UBM is a valuable diagnostic tool to confirm anterior capsular disruption. Early diagnosis and urgent surgical intervention are paramount to mitigate permanent glaucomatous damage.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Youssef Chajire, Mohamed Boualane, Zakaria Azemour, Nabil Bouslous, Omar Moustaine

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Drafting of the manuscript: Youssef Chajire, Mohamed Boualane, Zakaria Azemour, Nabil Bouslous, Omar Moustaine

Critical review of the manuscript for important intellectual content: Youssef Chajire, Mohamed Boualane, Zakaria Azemour, Nabil Bouslous, Omar Moustaine

Disclosures

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