

Case Report: High Intraocular Pressure vs Temporal Arteritis, a Diagnostic Challenge

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Abstract

Temporal arteritis is a sight-threatening condition requiring urgent intervention. We present the case of an 81-year-old gentleman with a blind right eye who presented with persistent unilateral temporal pain. Initially treated empirically for temporal arteritis due to systemic symptoms and mildly elevated C-reactive protein, his symptoms persisted. Ophthalmic evaluation revealed a Grade 4 hyphema with significantly elevated intraocular pressure (IOP). Despite initial medical management, recurrent intraocular haemorrhage led to sustained IOP elevation and pain. Given his blind eye, management prioritised comfort, with cyclodiode laser therapy successfully achieving long-term IOP control. This case underscores the importance of considering ocular pathology, even in blind eyes, when systemic symptoms mimic alternative diagnoses. Furthermore, it highlights cyclodiode laser therapy as a valuable intervention for IOP control in elderly patients with limited treatment options.

Keywords

Temporal Arteritis, Hyphema, Intraocular Pressure, Cyclodiode Laser, Ophthalmic Emergencies

1. Case Description

This case describes an 81-year-old gentleman with a longstanding right blind eye who presented with a three-month history of persistent temporal pain on the same side. This gentleman had presented to the emergency department complaining of worsening temporal headaches. Investigations were done, including imaging studies (CT head) and blood tests (inflammatory markers, CBC, renal profile), and he was seen by a rheumatology specialist. In view of his symptoms and a mildly elevated C-reactive protein, he was treated empirically with steroids, as a

suspected temporal arteritis. As the patient was blind in the right eye, vision could not be assessed. No temporal biopsy was done as it was deemed unnecessary by the medical team, and the aim of treatment was mainly pain management.

After three months, he was seen at his yearly ophthalmology clinic assessment, and he complained about the lack of response to treatment. His medical records showed a history of right recurrent vitreous haemorrhage secondary to a leaking retinal macroaneurysm, which had been unsuccessfully treated with a pars plana vitrectomy (PPV) and endolaser in 2018. This had been complicated by elevated intraocular pressure (IOP) which had been treated with peripheral iridotomy and topical treatment. As the patient was pain free, and refused further invasive management, he was left on topical treatment (prostaglandin-analogue once daily) with controlled IOP. He was documented as having vision of no light perception (NPL) in the right eye, and 6/12 in the left eye in 2019.

On examination during his present assessment, he was noted to have a Grade 4 old hyphaema with an almost completely filled anterior chamber (**Table 1**) in the right eye (**Figure 1**).

Table 1. Grades of hyphema.

Grade	Description
Grade 0/microhyphema	Scattered RBCs in the anterior chamber
Grade 1	<33% of anterior chamber filling
Grade 2	33%-50% filling of anterior chamber
Grade 3	>50% but less than total filling of anterior chamber
Grade 4	100% anterior chamber filling

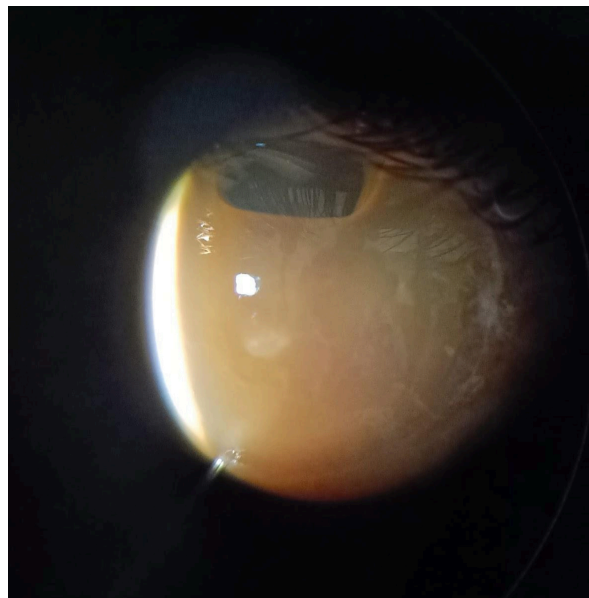


Figure 1. Grade 4 old hyphaema on presentation (right eye).

IOP was measured at 50 mmHg, and B-scan imaging showed a vitreous bleed in the posterior chamber, consistent with the previous notes. The patient was started on treatment with acetazolamide orally 250 mg three times daily, and oral steroids were tailed down. He reported immediate improvement symptomatically and IOP was measured at 20 mmHg after two days. He was booked in for an urgent anterior chamber washout. Anticoagulation could not be stopped due to his mitral valve replacement and as per the instruction of the cardiothoracic surgeon.

The procedure was done in the operating theatre, with the removal of the coagulated blood. A sample was sent for laboratory assessment confirming no infective element was present. The beginning of a rebleed was noted during a procedure with the migration of blood from the posterior chamber. Intraocular pressure one day post procedure was 10 mmHg.

The patient was switched to topical therapy and acetazolamide stopped after one week. However, on further follow-up, it was noted that the anterior chamber re-filled with blood 3 weeks later (Grade 3 hyphaema), with IOP rising to 28 mmHg, despite treatment (**Figure 2**). The patient remained asymptomatic.

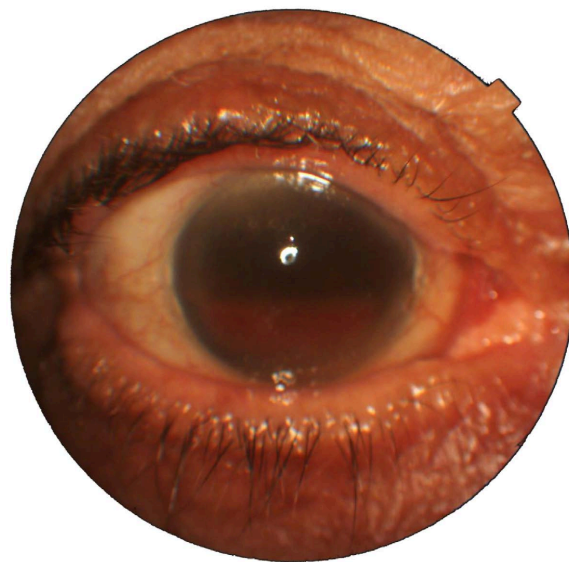


Figure 2. Hyphaema two weeks post procedure.

Further management was discussed with the patient. In view of no vision, the aim was to keep him comfortable, as per his own wishes. The option of surgery with removal of the posterior chamber and anterior chamber blood was offered but refused by the patient. The option of cyclodiode laser and intracameral bevacizumab to try to control further rebleed was offered.

Cyclodiode laser therapy, anterior chamber washout combined with intracameral bevacizumab (off-license) was performed. A bleed persisted in the anterior chamber post-intervention. However, IOP after 3 months, and then 6 months post intervention remained in the range of 12 - 14 mmHg on topical brinzolamide treatment twice daily (**Figure 3**), and the patient remained pain free.



Figure 3. The anterior chamber re-filled with blood 3 weeks later.

2. Discussion

This case highlights several important teaching points in the management of ocular emergencies, particularly in older patients with systemic comorbidities and longstanding visual impairment.

The first teaching point is that temporal arteritis is a two-way diagnostic challenge. The initial treatment illustrates the delicate balance between early treatment and thorough diagnostic evaluation. Whilst temporal arteritis is a sight-threatening emergency, which requires prompt intervention, the focus on systemic symptoms in this case may have delayed ocular evaluation, as the eye was already blind. This highlights the importance of considering ocular pathology in blind eyes, particularly when patients present with persistent pain or atypical symptoms. This case raises questions about the diagnostic pathway and whether an alternative approach could have expedited definitive management. Clinicians must maintain a broad differential diagnosis and ensure a complete ophthalmic examination, including IOP measurement and anterior chamber assessment, to avoid missing concurrent ocular pathology [1].

Secondly, management goals in elderly patients should prioritise comfort and pain relief. This case emphasizes the importance of this particularly in individuals over 70 years of age with severe distress as was the case with this gentleman. The patient experienced severe pain due to persistent high IOP, which resulted from the recurrent intraocular haemorrhage that led to the hyphaema on examination. A hyphaema is termed as an accumulation of blood in the anterior chamber of the eye, which can also be graded as discussed earlier in **Table 1** [2]. Whilst systemic acetazolamide initially provided pain relief by lowering IOP, its long-term use was not feasible due to the side effects it comes with, namely light-headedness, nausea, muscle cramps and numbness and tingling in the extremities as well as potential

renal complications.

Thus, apart from anterior chamber washout, which was done in the operating theatre, as also recommended in recent literature in 2024 [3], cyclodiode laser therapy was ultimately selected as a definitive intervention, effectively reducing the IOP by targeting the ciliary body to decrease aqueous humor production. In doing so, any re-bleeds would not further increase the IOP and thus avoid pain. Cyclodiode is a valuable option in managing blind, painful eyes, particularly in elderly patients as it is minimally invasive and avoids repeated surgical interventions. Cyclodiode laser is not risk free, and patients should be informed that there is a risk of pain and inflammation, a risk of inadequate pressure reduction needing a repeat of the procedure, or of excessive reduction of pressure, rebleed or reduction/loss of vision. In our specific case, it was decided to proceed due to patient factors, as well as the main focus being on pain resolution with limited unwanted side-effects. This case serves as a teaching point for considering cyclodiode earlier in the management of similar presentations, especially when other measures are insufficient or unsuitable for long-term use.

A similar case published in 2020 [4] discussed a patient who developed AACG (acute angle-closure glaucoma) following a vitreous haemorrhage induced by intravitreal injection. This patient had a history of exudative macular degeneration and experienced sudden vision loss and elevated IOP after the injection. This is relevant to our case who despite being blind in his affected eye, developed IOP and recurrent intraocular haemorrhage, leading to multiple surgical interventions. Similar to the way the authors emphasize the importance of monitoring for complications like AACG after intravitreal injections, our case stresses the need for thorough ophthalmic evaluation in patients with recurrent haemorrhages, even in a blind eye. In both of the cases, maintaining IOP control and managing pain were critical.

Furthermore, this case was complicated with the use of warfarin therapy, though not definitively linked to the recurrent haemorrhage, likely contributed to the persistence of the intraocular bleeding. This is consistent with the known association of anticoagulation with spontaneous ocular haemorrhages causing a hyphaema [5], particularly in eyes with underlying vascular fragility or compromised anatomy. The role of anticoagulation in this case warrants further exploration, including an evaluation of the indication for warfarin therapy and whether temporary interruption could have been considered.

Similarly, a case reported by Stenberg *et al.* (2022) [6] describes a 79-year old patient on apixaban who developed spontaneous hyphaema and vitreous haemorrhage, leading to secondary glaucoma. In this literature, the decision was made to reverse anticoagulation to prevent permanent vision loss. Similar to our case, where the patient experienced recurrent intraocular haemorrhage and elevated IOP, the management of IOP was the main focus. Although our patient was on warfarin not apixaban, both cases highlight the potential for anticoagulants to exacerbate intraocular bleeding and complicate treatment decisions. The use of cy-

clodiode laser therapy in our patient parallels the need for timely interventions to prevent irreversible damage to the ocular structures, reinforcing the importance of addressing both the primary haemorrhage and secondary glaucoma in these high-risk patients.

Our case highlights the importance of a multidisciplinary approach, involving ophthalmology, rheumatology and potentially haematology, to optimise management in complex presentations. Furthermore, it also highlights the need for tailored therapeutic decisions in blind eyes, balancing the risks and benefits of repeated invasive procedures against the goal of pain relief and quality of life improvement.

3. Conclusion

This case highlights the need for comprehensive assessment and individualised management strategies in older patients with complex presentations. Key lessons include the importance of considering ocular pathology even in blind eyes during systemic diagnostic workups, as well as prioritizing comfort and quality of life in patients with limited therapeutic options such as in our case. Offering sustained pain relief and IOP control are key to maintaining patient comfort. Future considerations could include earlier surgical intervention or even primary cyclodiode therapy for similar presentations, potentially reducing the burden of repeated procedures. Additionally, close collaboration with haematology in anticoagulated patients may also help mitigate bleeding risks during the perioperative and postoperative periods.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent. The patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of the article.

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