Utilisation of anterior segment OCT pre-operatively in delayed presentation of complete hyphema/corneal blood staining.

Authors: Dr Elizabeth Mahon, Dr Anshul Radotra, Mr Thomas Jenyon
Royal Shrewsbury Hospital, The Shrewsbury and Telford Hospital NHS Trust

NHS
The Shrewsbury and Telford Hospital
NHS Trust

Introduction: Anterior segment optical coherence tomography (AS-OCT) is a readily available non-invasive investigation of the anterior segment (1). AS-OCT is beneficial as it can be used to view pathological processes that may otherwise be difficult to assess, and it can therefore be used to evaluate the presence of hyphema and corneal staining (1,2). Hyphema uncommonly results in permanent vision loss, yet if blindness does occur this is usually due to corneal blood staining (3).

Case study:

We report a case study of 73-year-old gentlemen with delayed presentation of a unilateral presumed spontaneous hyphema of unknown duration with an elevated IOP of 45. Past medical history included atrial fibrillation, myeloma, and small lymphocytic lymphoma / chronic lymphocytic leukaemia. Examination showed a unilateral suspected complete hyphema. He was prescribed ocular antihypertensives.

On day four review due to persistent raised pressures and no sign of any resolution he was scheduled for surgery. This was then delayed for almost two weeks due to a suspected UTI.

Once fit, we proceeded with AC washout. Operative findings included dense corneal staining, but no blood was found in the AC and only clear aqueous was aspirated.

Hyphema and Corneal Staining: Corneal staining typically occurs after prolonged exposure to hyphema with raised IOP (4), which can be seen in Figure 1.

Figure 1:

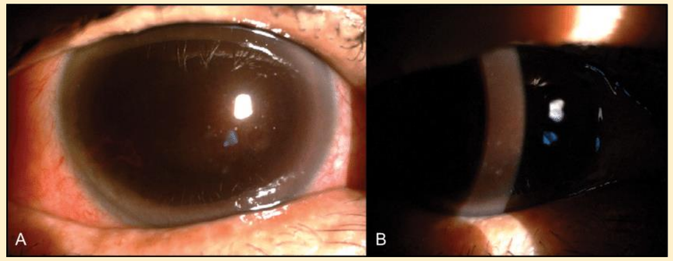


Figure 1 a slit lamp image showed the total hyphema with a dark red color expanded into the cornea stroma of the right eye from anterior view (A) and oblique view (B).

Surgical intervention (anterior chamber (AC) wash out) is indicated in a minority of cases, particularly if there is sustained high intra-ocular pressure (IOP) (4). Risks for AC washout include iatrogenic damage to the iris and corneal endothelium as well as infection and further bleed (5).

If further bleeding does occur, either iatrogenically through surgical intervention or as part of the disease process, the rates and severity of potential complications increases (3).

Conclusion: We feel the dense corneal staining (due to unknown duration of hyphema and high pressure) hid the resolution of the hyphema. He therefore underwent an unnecessary procedure with associated risks.

We hypothesise in similar cases with no corneal view, an AS-OCT prior to surgery to confirm on-going hyphema may help identify patients who no longer need this procedure.

References:
1. Mateo-Montoya, A. (2009) "Anterior segment optical coherence tomography as a diagnostic tool for cyclodialysis clefts," Archives of Ophthalmology, 127(1), p. 109. Available at: https://doi.org/10.1001/archophthalmol.2008.561
2. Doors, M. et al. (2010) "Value of optical coherence tomography for anterior segment surgery," Journal of Cataract and Refractive Surgery, 36(7), pp. 1213–1229. Available at: https://doi.org/10.1016/j.jcrs.2010.05.002
3. Gharaibeh, A. et al. (2019) "Medical interventions for traumatic hyphema," Cochrane Database of Systematic Reviews, 2019(1). Available at: https://doi.org/10.1002/14651858.cd005431.pub4.
4. Mansoori, T. and Srirampur1=, A. (2021) "Anterior Segment Optical Coherence Tomography Findings in Corneal Blood Staining," Journal of Current Ophthalmology , 33. Available at: https://doi.org/10.4103/JOCO.JOCO_219_20
5. Yu, T. et al. (2008) "Use of an anterior chamber maintainer in the surgical management of traumatic hyphaemas," Clinical & Experimental Ophthalmology, 36(3), pp. 206–208. Available at: https://doi.org/10.1111/j.1442-9071.2008.01712.x.

Figure List:
1. Gradual spontaneous resolution of corneal bloodstaining after anterior chamber irrigation for rebleeding secondary to traumatic hyphema - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/a-slit-lamp-image-showed-the-total-hyphema-with-a-dark-red-color-expanded-into-the-cornea_fig1_327862341