A case of '60-day glaucoma'

BY JAGRUTI GODHANIYA AND RAJAN PAUL

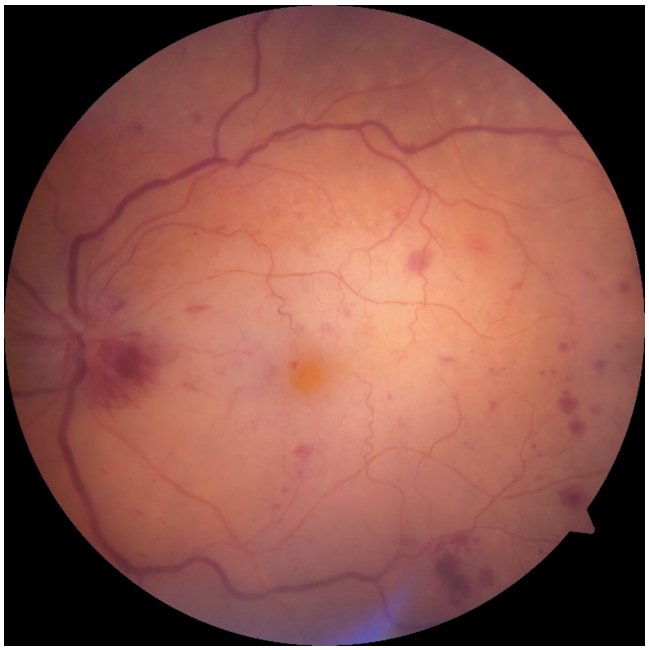

Figure 1: Left fundus photograph showing CRVO with multiple haemorrhages in all four quadrants.

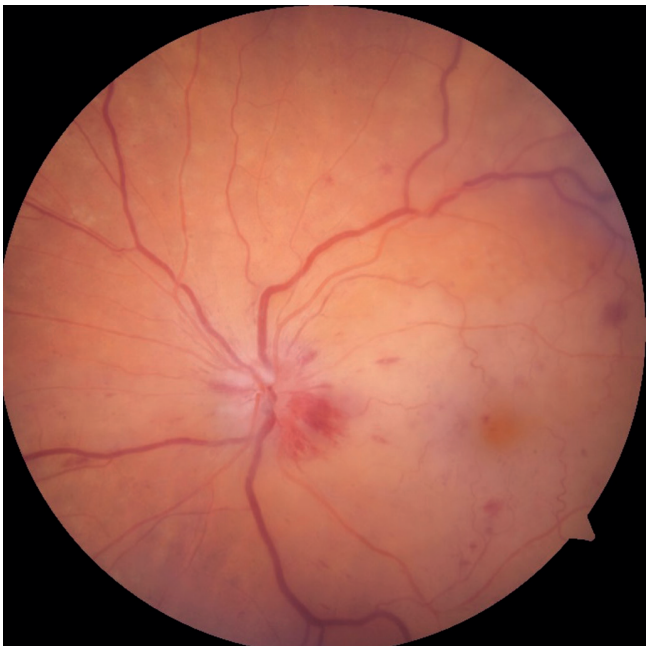

Figure 2: Left fundus photograph showing CRVO with blurred disc margin.

Neovascular glaucoma (NVG) has been called '90-' or '100-day glaucoma' in the past due to its typical development three months after the onset of central retinal vein occlusion (CRVO). In reality, NVG can occur anywhere between two weeks and two years after initial CRVO with over 80% occurring within six months [1].

Case

A 90-year-old female presented to eye casualty with painless loss of vision in the left eye noticed on waking the same day. Previous medical history included aortic regurgitation, mitral regurgitation, acquired hypothyroidism, diverticular disease, chronic kidney disease (stage 3), and iron deficiency anaemia. Previous ocular history included bilateral phacoemulsification with intraocular lens insertion eight years ago. Aided right visual acuity (RVA) was 0.10 (6/7.5) and aided left visual acuity (LVA) was counting fingers (CF) – previous VA in the left eye was 6/6. There was no relative afferent pupillary defect (RAPD) and fundus examination of the left retina revealed multiple haemorrhages in all four quadrants (Figure 1) and blurred left disc margin (Figure 2). A diagnosis of left CRVO was made and the patient was followed up in one week at which point there were no change to her symptoms or vision. Intraocular pressure (IOP) measurements were taken (right eye (RE): 18mmHg, left eye (LE): 10mmHg) and a follow-up with the medical retina team was requested.

Two months later the patient presented to the emergency department with a one-week history of left eye pain and headache which had worsened severely over 24 hours. Blood results including erythrocyte sedimentation rate and C-reactive protein were normal. After discussion with the ophthalmology team the patient was discharged home with analgesia and a follow-up in eye casualty arranged.

Three days later the patient returned to eye casualty with the following VA and IOPs – RE 0.12 (6/7.5), 10mmHg, LE: hand movement (HM), 42mmHg. On examination of the left eye there was corneal oedema, hyphaemia, rubeosis iridis and a RAPD. The patient was diagnosed with left neovascular glaucoma secondary to ischaemic CRVO.

Subsequently the patient was started on topical brimonidine for two weeks, combined dorzolamide and timolol lifelong, cyclopentolate for four weeks and a four-week reducing regime of topical prednisolone. At this point no anti-vascular endothelial growth factor injections or panretinal photocoagulation (PRP) was given due to the hazy cornea. A week later IOP in the left eye was still raised at 50mmHg and LVA reduced to perception of light (PL), however the patient no longer reported any pain or discomfort.

A month later the patient was followed up in the medical retina clinic and the left IOP had come down to 27mmHg. The corneal oedema had slightly improved but LVA still remained PL. The patient still remains pain free. The option of intravitreal anti-VEGF injections was discussed and patient given time to decide. She was also referred to the glaucoma unit for management of NVG.

Discussion

Retinal vein occlusions are a common cause of visual loss in the United Kingdom and are the second most common cause of reduced vision due to retinal vascular disease after diabetic retinopathy [2]. More than 90% of patients with ischaemic CRVO have a final visual acuity of 6/60 or worse, as well as a higher association with systemic hypertension, diabetes and glaucoma [3,4].

In CRVO retinal vein thrombosis can lead to non-perfusion of capillaries resulting in retinal ischaemia. These changes result in increased production of VEGF and other cytokines, which promote new vessel formation mainly involving the iris and angle. These complications can lead to neovascular glaucoma, vitreous haemorrhage and tractional retinal detachment with severe visual impairment [2]. Thirty percent of eyes with non-ischaemic CRVO may convert to an ischaemic CRVO over three years, with a

16% conversion rate within the first four months of the initial occlusion [1,5].

The Royal College of Ophthalmologists' (RCOphth) Retinal Vein Occlusion Guideline (2022) states thiat schaemic CRVO is associated with one or more of the following characteristics [2]:

- Poor visual acuity (44% of eyes with vision of <6/60 develop rubeosis) [3].
- RAPD.
- Presence of multiple dark deep intraretinal haemorrhages.
- Presence of multiple cotton wool spots.
- Degree of retinal vein dilation and tortuosity.
- Fluorescein angiography showing greater than 10 disc areas of retinal capillary non-perfusion on seven field fluorescein angiography [3].
- Electroretinogram (ERG): reduced b wave amplitude, reduced b:a ratio and prolonged b-wave implicit time.

Management of CRVO with neovascular glaucoma include [2]:

- Keeping the eye pain free. In a blind eye this can be achieved with topical steroids and anti-cholinergics.
- Topical IOP lowering agents.
- Cyclodiode laser therapy / tube shunt surgery.
- PRP remains the mainstay of treatment when iris new vessels (NVI) or angle new vessels (NVA) are visible.
- Intravitreal and intracameral anti-VEGF agents have been shown to cause regression of iris new vessels and decrease angle obstruction in combination with PRP. However, caution must be taken in raised IOP as this can be exacerbated in the short term.
- If the view of the fundus is obscured, transcleral diode therapy and retinal cryotherapy can be used.
- Although eyes with VA ≤6/96 were excluded from anti-VEGF clinical trials, therapy should still be considered if there is significant macular oedema as improvements in vision may still occur.
- Should macula oedema resolve with no improvement in visual acuity following a trial of anti-VEGF, cessation is recommended after three injections with close monitoring of neovascularisation post treatment.

This case highlights the importance of regular follow-up in patients that are at high risk of significant ischaemia post CRVO. If anti-VEGF is not commenced, the RCOphth recommend monthly follow-up in the first six months and every three months for one year thereafter. In ischaemic CRVO eyes that received anti-VEGF therapy, one-to-two monthly reviews are recommended in the first year. Follow-up is recommended for three years from the last intervention.

References

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