

Intraocular Avastin (Bevacizumab) for Neovascularisation of the Iris and Neovascular Glaucoma

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Abstract

Introduction: The aim of this study was to determine the effectiveness of intraocular injections of bevacizumab for neovascularisation of the iris and neovascular glaucoma. **Clinical Picture:** Three patients with neovascularisation of the iris due to various causes were recruited. **Treatment:** Patients were treated with intraocular bevacizumab. **Outcome:** Neovascularisation of the iris was noted to have completely regressed as early as 3 days after the injection and in all the patients (100%) within 8 days after injection. They were followed up for at least 1 month with no clinical evidence of recurrence. Visual acuity remained stable or improved, and the intraocular pressure was controlled in all the 3 patients' eyes. Vitreous haemorrhage also cleared. No signs of inflammation or complications were observed. **Conclusion:** Intraocular injection of bevacizumab is effective and safe for patients with neovascularisation of the iris and neovascular glaucoma with or without vitreous haemorrhage.

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Key words: Intravitreal, Vascular endothelial growth factor, Vitreous haemorrhage

Introduction

Neovascularisation of the iris is associated with many ischaemia retinal disorders¹ and elevated levels of the vascular endothelial growth factor is found in patients with neovascular glaucoma.² Inhibition of the vascular endothelial growth factor has been shown to prevent retinal ischaemia-associated neovascularisation of the iris.³ Hitherto, panretinal photocoagulation was used to effect regression of neovascularisation of the iris.⁴

Bevacizumab (Genentech, San Francisco, California, USA) is a full-length recombinant humanised monoclonal antibody directed against the vascular endothelial growth factor and approved as an antiangiogenic agent for the treatment of metastatic colorectal cancer. Off-label use has been shown to be effective as an adjunctive treatment for neovascularisation of the iris as well as other ischaemic ocular diseases. We report the effectiveness and safety of bevacizumab injections for neovascularisation of the iris and neovascular glaucoma with or without vitreous haemorrhage.

Case Reports

Three patients (all males) each with neovascularisation

of the iris in one eye were enrolled for the study. Signed informed consent was obtained prior to the injections and they were all aware of the off-label use of bevacizumab.

Case 1

A 36-year-old Chinese male who was highly myopic was referred for vitreous haemorrhage and hyphema secondary to neovascularisation of the iris in his left eye (Fig. 1a). He had undergone surgery a year earlier for a left giant retinal tear followed by vitrectomy for epi-retinal membrane with inferior retinal detachment. He was blind in the right eye following a failed retinal detachment surgery for a giant retinal tear 6 years earlier. Visual acuity was no light projection in the right eye and light projection in the left eye. The left eye was aphakic with an intraocular pressure (IOP) of 12 mm Hg. He received an injection of intracameral bevacizumab 1.25 mg in his left eye. Eight days later, the visual acuity was hand movement with the hyphema resolved and neovascularisation of the iris had completely regressed (Fig. 1b). The vitreous haemorrhage cleared completely a month later and the visual acuity returned to 6/45. There was no recurrence of neovascularisation of the iris and vitreous haemorrhage at the end of 4 months of follow-up.

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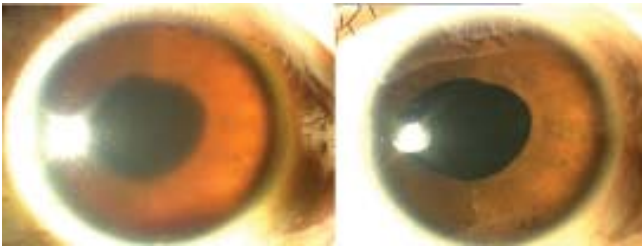


Fig. 1a. Hyphema secondary to neovascularisation of the iris in the left eye.
 Fig. 1b. Hyphema resolved and neovascularisation of the iris completely regressed.

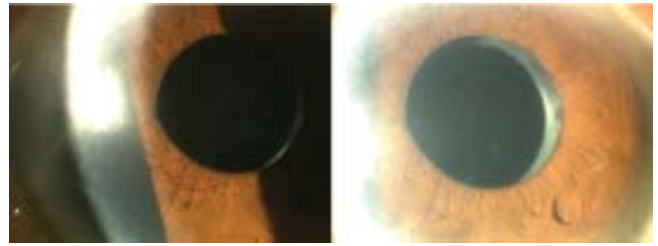


Fig. 2a. Neovascularisation of the iris secondary to branch retinal artery occlusion in the right eye.
 Fig. 2b. Complete disappearance of neovascularisation of the iris after 3 days.

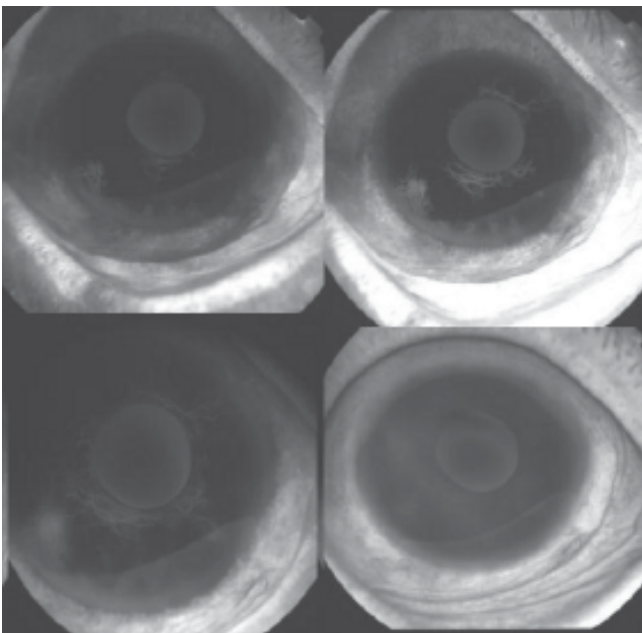


Fig. 3. Iris fluorescein angiography showing neovascularisation of the iris.

Case 2

A 75-year-old Chinese male with multiple ischaemic risk factors, bilateral branch retinal artery occlusion and pseudoexfoliation syndrome presented with acutely injected right eye. His IOP was 30 mm Hg despite maximal medical therapy. The left eye was normal. Examination revealed neovascularisation of the iris (Fig. 2a), which was confirmed on iris fluorescein angiography (Fig. 3). 1.25 mg of intravitreal bevacizumab was administered and the neovascularisation of the iris completely disappeared 3 days later (Fig. 2b). The 1-month follow-up revealed no recurrence of neovascularisation of the iris and IOP was controlled at 12 mm Hg.

Case 3

A 67-year-old Chinese male had a history of bilateral proliferative diabetic retinopathy and persistent neovascularisation of the iris despite extensive panretinal photocoagulation and vitrectomy. IOP was controlled

medically. 1.25 mg of intravitreal bevacizumab was administered in the right eye with complete disappearance of neovascularisation of the iris a week later. There was no recurrence at 1-month follow-up and visual acuity was stable at 6/60 pre- and post-bevacizumab injections. The last follow-up visit at 5 months post injection did not show any recurrence of neovascularisation at the iris.

Discussion

Each of the 3 patients had neovascularisation of the iris in one eye due to various causes – recurrent retinal detachment (Case 1), retinal artery occlusion (Case 2) and proliferative diabetic retinopathy (Case 3). Case 1 had vitreous haemorrhage and hyphema in addition to neovascularisation of the iris which resolved completely after a single injection of bevacizumab. Case 2 had neovascular glaucoma which was not controlled despite maximal medical therapy. With regression of the neovascularisation of the iris after a single application, the IOP was successfully controlled. All the patients had at least 1-month follow-up with no recurrence of neovascularisation of the iris, vitreous haemorrhage or hyphema, with good control of IOP. Complete regression of neovascularisation of the iris was seen as early as 3 days after administration of the injection. None of the cases required a second injection and no intraocular inflammation or complications were observed. Visual acuity was stable or improved in all the eyes.

A single injection of bevacizumab can regress or reduce leakage from rubeotic vessels and may reduce the perioperative risk of intracameral bleeding.⁵ Our current study demonstrates the use of bevacizumab in eyes with neovascularisation of the iris and neovascular glaucoma with or without vitreous haemorrhage. We suggest that bevacizumab has a role to play in the regression of neovascularisation of the iris as well as in the control of IOP. It may also hasten the clearance of vitreous haemorrhage. Intracameral application is suitable for patients who are aphakic, but intravitreal injection is preferred for patients who are phakic or pseudophakic as

the ischaemic drive arises from the posterior segment. A randomised, prospective study to evaluate bevacizumab efficacy and safety in ocular neovascular disease would be useful to characterise its use in various ocular conditions.

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