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Case report

Intravitreal bevacizumab as therapy for refractory neovascular glaucoma secondary to iris metastasis of breast carcinoma

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ABSTRACT

Purpose: To report a case of refractory glaucoma secondary to iris metastasis from breast cancer which was successfully treated with intravitreal bevacizumab.
Observations: A 72-year-old woman presented with left ocular pain, vision loss and neovascular glaucoma secondary to iris metastasis from breast cancer. A single intravitreal injection of bevacizumab resulted in prolonged resolution of iris neovascularization, reduction of intraocular pressure and ocular pain relief. Iris tumor regression was later noted following the reinstatement of systemic chemotherapy.
Conclusions & importance: A single intravitreal bevacizumab injection may be sufficient to achieve palliative control of neovascular glaucoma secondary to iris breast cancer metastasis. To our knowledge, this is the first case report in which a single intravitreal bevacizumab injection was used for the effective management of this condition.

1. Introduction

Breast cancer is the most common cause of iris metastasis, followed by lung cancer and cutaneous melanoma.[1] Although metastasis to the iris is uncommon, once detected, it is associated with a median time to survival of 10 months.[1] Generally, the patients will present with ocular pain, blurred vision, photosensitivity or a visible mass.[1] Current treatments for iris metastasis include systemic chemotherapy, iridectomy, focal plaque radiotherapy, and external beam radiation or enucleation.[1] As this condition is associated with a poor life prognosis, the availability of an easily administered, minimally invasive and effective means of treatment may significantly improve the patient's quality of life.

In a series of 107 eyes with metastatic tumor to the iris, twenty-seven percent and eight percent, had evidence of iris neovascularization and neovascular glaucoma, respectively.[1] Bevacizumab is a humanized monoclonal antibody against vasculo endothelial growth factor (VEGF); it inhibits angiogenesis and tumor growth.[2] In this report, we present the case of a 72-year-old patient with neovascular glaucoma secondary to iris metastasis in which a single intravitreal bevacizumab (IVB) injection resulted in effective resolution of symptoms, preservation of visual acuity and control of intraocular pressure that lasted until the patient died, 10 months after the initial presentation. In addition, concomitant reinstatement of systemic chemotherapy allowed for iris tumor regression in this patient.

2. Case report

A 72-year-old Hispanic female presented with a 2-week history of progressive blurred vision and pain on the left eye. She had history of a right breast carcinoma diagnosed 18 months prior to presentation, that was treated with radical mastectomy and chemotherapy. The cancer was considered in remission until one week prior to presentation, when a whole-body PET-CT scan revealed widespread metastatic disease involving the right lung, mediastinal lymph nodes, both adrenal glands, the liver and the skeletal system.

The initial visual acuity was 20/25 OD and finger counting at 2 feet OS. Intraocular pressure was 15 mmHg OD and 52 mmHg OS. Slit-lamp examination of the left eye demonstrated congested conjunctiva, keratic-precipitates in the cornea and +2 cells in the anterior chamber. A tan, nodular, peripheral iris mass with irregular borders occupied the anterior chamber angle from the 10 to 2 o'clock position (Fig. 1). Rubeosis iridis, posterior synechiae and cataract were observed. On gonioscopy, the left angle was not visualized superiorly due to the iris mass, the nasal and temporal quadrants revealed neovascularization with secondary angle closure and bombe configuration, inferiorly the angle remained open with all structures visualized up to sclera spur. The slit lamp examination of the right eye was unremarkable. The

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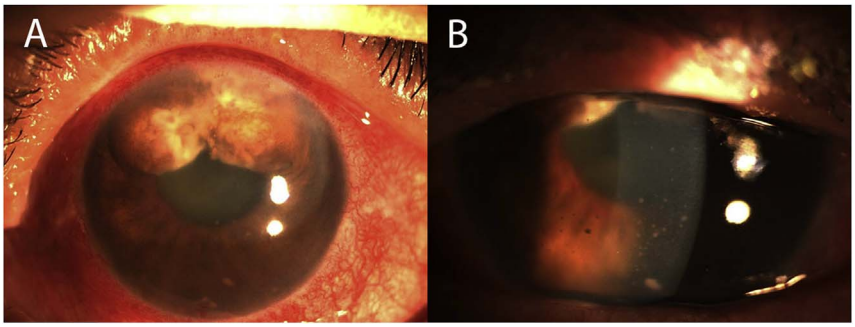

Fig. 1. Findings Upon Initial Presentation A. Color anterior segment photograph demonstrates the extent of the iris mass. B. Granulomatous keratic precipitates and marked anterior chamber inflammation were present. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

fundus of OD had drusen and the fundus of OS although of poor view had drusen; no other fundus pathology was visualized. B-Scan ultrasonography of the posterior segment was unremarkable on the left eye. Anterior segment ultrasound biomicroscopy showed tumor infiltration of the iris and ciliary body superiorly; causing localized angle closure.

Initially, therapy with prednisolone acetate 1% and dorzolamide 2%/Timolol 0.5% fixed combination eye drops was started. After 1 week, the topical therapy resulted in improved vision to 20/80 and reduction of IOP to 30 mmHg on the left eye.

After discussing the treatment options with the patient, the off-label use of IVB (Avastin; Novartis Pharma S.A.S., Huningue, France) was agreed upon as a palliative therapy. After a written informed consent from the patient, 1.25 mg/cc of bevacizumab was administered intravitreally though pars plana without complications. One week after the bevacizumab injection OS, the IOP was controlled (15 mmHg). The patient was then started on systemic chemotherapy.

For the remainder of her follow-up, the IOP remained controlled with dorzolamide 2%/timolol 0.5% eye drops bid, not requiring further bevacizumab injections. Color photographs were taken 8 weeks post IVB revealed tumor regression (Fig. 2B). She was monitored monthly until 8 months following the IVB injection. Ten months after presentation the patient died.

3. Discussion

Breast cancer is the most common cause of iris metastasis.[1] Treatment options such as iridectomy, plaque radiotherapy, external beam radiotherapy, and enucleation, although proven effective, are invasive and require prolonged recovery times. Systemic chemotherapy has been shown to effectively reduce the iris tumor size in some of these patients.[1]

At least two other recent case reports provide evidence that supports the use of anti-VEGF therapy in patients with iris metastasis secondary to breast and non-small oat cell lung cancer.[3,4] In 2016, Seidman CJ et al., reported the use of 3 monthly IVB injections for the management of persistent angle neovascularization secondary to breast cancer iris metastasis; and successfully treated the lesion until just a small amount of iris neovascularization and tumor nodules remained.[3] In 2014, Makri OE et al., reported the successful use of intravitreal ranibizumab, in a patient with neovascular glaucoma from iris metastasis, that was the presenting sign of non-small out cell lung cancer.[4]

In our case, which dates to 2013, the patient had a marked granulomatous intraocular inflammation and secondary neovascular glaucoma associated with the breast cancer metastatic lesion. Our rational for anti-VEGF use was that controlling the iris neovascularization that was present in association with the tumor, would lead to control of the neovascular glaucoma and relief of symptoms; allowing for eventual tumor regression to occur as the systemic chemotherapy was reinstated. This effect was successfully achieved after the use of a single IVB injection (Fig. 2).

Whether a single IVB injection or a series of monthly injections provide the best results for these patients remains unanswered. The short life expectancy versus the possible systemic side effects of intraocular anti-VEGF agents should be considered when deciding on the best possible treatment regimen for these patients.

4. Conclusions

IVB appears to be an effective and minimally invasive means of achieving control of angle neovascularization secondary to iris metastasis from breast cancer. Our case suggests that a single injection of intravitreal bevacizumab may be sufficient to achieve palliative control in at least some of these patients. Further studies are required to establish the efficacy and safety of using intravitreal bevacizumab in patients with breast cancer iris metastasis.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

Disclosures

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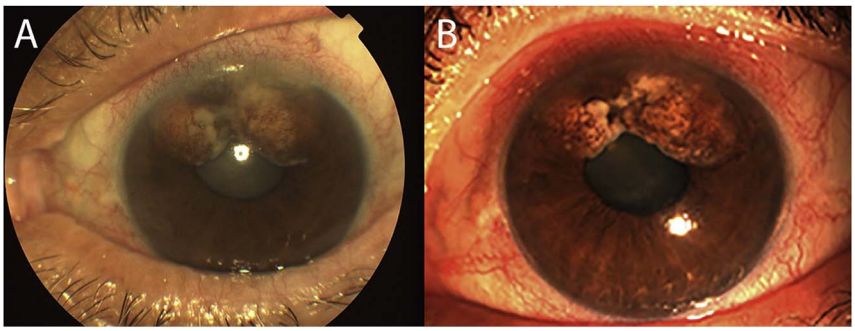

Fig. 2. Post-Treatment Progression Color Photographs A. Control of the rubeosis iridis, anterior chamber inflammation and intraocular pressure were achieved one week after administration of IVB. B. Eight weeks following the administration of IVB. The patient has persistent control of intraocular pressure and inflammation. A reduction in tumor size is noted. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Conflicts of interest

The following authors have no financial disclosures: SV, LM, EB, AO.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.ajoc.2018.01.007.

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