Intracameral bevacizumab administered for non-small cell lung cancer metastasis to iris

Jonathan C. Schell,[1] Steven B. Koenig,[1] Kenneth Bastin,[2] William J. Wirostko[1]

[1]The Eye Institute, Department of Ophthalmology, Medical College of Wisconsin; [2]Radiation Oncology Associates Ltd., St Luke's Medical Center, Milwaukee, Wisconsin, USA

Abstract

Ocular iris metastasis from lung cancer is uncommon. We report a patient with metastatic non-small cell lung cancer who was found to have a metastatic lesion to the iris. Local therapy for pain control and vision loss was administered with intracameral bevacizumab. Complete resolution of pain, improvement in vision, and near complete resolution of iris tumor were seen within two months. No ocular toxicity to anterior segment structures was detectable on corneal pachymetry and corneal specular microscopy. This is the first case report demonstrating safety and efficacy of intracameral bevacizumab for iris metastasis from non-small cell lung cancer.

Introduction

Metastatic iris lesions are an important clinical entity that may be associated with significant ocular morbidity.[1] Presenting complaints include vision loss, glaucoma, and pain. Management typically involves chemotherapy or radiotherapy according to various factors, including underlying systemic disease and prior cancer treatments. Overall prognosis is determined by systemic neoplastic disease.

Bevacizumab is a monoclonal antibody directed against circulating vascular endothelial-derived growth factor (VEGF). It is useful in the management of several systemic malignancies, including non-small cell lung cancer .[2] Although intravenous bevacizumab has been reported for treating intraocular metastases,[3] the authors are not aware that intracameral bevacizumab has been described for this purpose. Intracameral bevacizumab appear well-tolerated by the cornea in rabbits and humans.[4-6] Herein the authors report the use of intracameral bevacizumab for the treatment of ocular pain due to a metastatic iris neoplasm.

Case Report

A 63-year-old Caucasian male was referred for 3 weeks of pain, redness, and elevated intraocular pressure Oculus Dexter (OD). Symptoms persisted despite topical prednisone acetate 1% and travoprost 0.004%. Past medical history included non-small cell lung cancer with recurrent central nervous system metastases for which he was receiving whole brain radiation and temozolomide. He had previously received whole brain and chest radiation with paclitaxel, carboplatin, and bevacizumab 15 months earlier. On exam, vision was 20/70 OD and 20/30 Oculus Sinister (OS). Intraocular pressure was 22 mm Hg OD and 16 mm Hg OS. Slit lamp examination revealed superior conjunctival hyperemia, and a well-defined whitish iris mass with irregular edges and mild vascularity superiorly OD (Figure 1). A pseudohypopyon was present inferiorly. Fundus exam was non-contributory Oculus Uterque (OU).

Treatment options of chemotherapy or radiotherapy were discussed with patient and his oncologist. Additional radiotherapy was deferred due to concern for central nervous system (CNS) toxicity. Systemic bevacizumab was not chosen as it likely would be ineffective given progressive disease following his prior dosing. Decision was made to locally manage ocular pain, decreased vision, and elevated intraocular pressure due to iris metastasis with intracameral bevacizumab. After informed consent was obtained, treatment was begun with anterior chamber paracentesis (0.1 mL) via limbus of corneal using a 25 gauge needle to obtain sample of aqueous fluid with pseudohypopyon for cytological analysis. This would also create intraocular volume for subsequent intracameral injection of bevacizumab. Intracameral bevacizumab (1.25 mg in 0.05 mL) was then injected via the limbus without complications. Cytology of aqueous sample revealed malignant cells consistent with non-small cell lung cancer. Topical prednisolone acetate 1% was discontinued. Two weeks after injection, there was near complete resolution of patient's symptoms. Conjunctival inflammation was less and the iris lesion was barely visible (Figure 2). No additional chemotherapeutic agents were given during this period. Intraocular pressure had normalized and topical travoprost 0.004% was discontinued. Two months later, all symptoms were resolved and the vision was improved. Patient was using no drops. Corneal pachymetry at that time was 592 μm OD (604 μm OS). Specular microscopy revealed a normal mosaic with an endothelial density of 1741 cells/mm^2 OD (1622 cells/mm^2 OS).

Correspondence: William J. Wirostko, The Eye Institute, 925 N. 87th St. Milwaukee, Wisconsin 53226, USA.
Tel: +1.414.456.7875 - Fax. +1.414.955.6300.
E-mail: wirostko@mcw.edu

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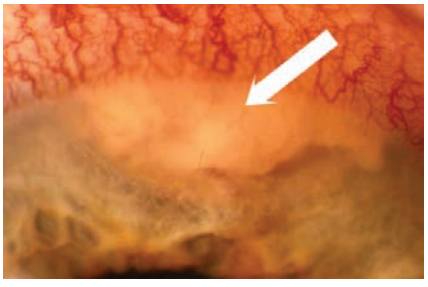

Figure 1. Slit lamp photograph of the right eye demonstrating metastatic iris neoplasm (arrow) on presentation.

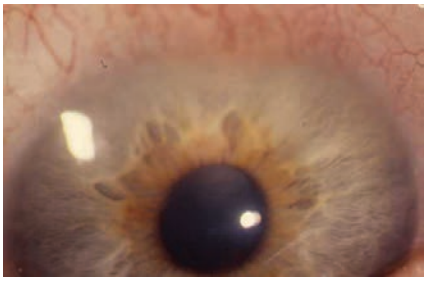

Figure 2. Slit lamp photograph of the right eye demonstrating near complete resolution of metastatic iris neoplasm 2 weeks after intracameral injection of bevacizumab.

Conclusions

This report suggests that intracameral bevacizumab can be effective and well-tolerated for localized control of iris metastases from non-small cell lung carcinoma. Our patient demonstrated near complete resolution of neoplastic mass, relief of ocular pain, and improvement of vision within 2 weeks of treatment. No corneal insult was observed as measured by central corneal thickness and corneal endothelial cell counts. Authors are not aware of any prior similar report. The dramatic response within 2 weeks of the injection suggests the effect was due to intracameral bevacizumab rather than his prior intravenous temozolamide or bevacizumab.

Intracameral bevacizumab for treatment of iris metastases may be helpful in certain patients when localized control is needed or systemic therapy alone is unable to control tumor growth. Furthermore, it is a method for clinicians to focally administer anti-VEGF therapy with lower systemic drug level exposure in patients with CNS metastases. Systemic bevacizumab remains controversial in patients with CNS metastases from non-small cell lung cancer due to risk of hemorrhagic complications.[7] Our patient could not receive further radiation therapy due to concern for CNS toxicity, and was not a candidate for systemic bevacizumab as it was felt to be ineffective for him. Intracameral bevacizumab allowed us to provide local tumor control, resolve his discomfort, and improve his vision. It is unclear why his iris tumor responded to intracameral bevacizumab when previously his systemic disease was refractory to systemic bevacizumab. Perhaps intracameral injection can achieve higher drug levels of bevacizumab than systemic dosing. The authors cannot comment on duration of treatment effect as this patient has been lost to follow-up. While the authors recognize the limitations of a single case report, we believe intracameral bevacizumab should be considered for local treatment of metastatic iris neoplasms in unique situations.

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