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External Beam Radiation Therapy for Metastatic Tumor to the Iris: A Case Report and Brief Literature Review

Clyde JW[1], Sakthivel G[1], Mulford D[2] and Singh DP[1]*

[1]Department of Radiation Oncology, University of Rochester Medical Center, Rochester, NY, USA
[2]Department of Medical Oncology; University of Rochester Medical Center, Rochester, NY, USA

***Corresponding author:** Singh DP, Department of Radiation Oncology, University of Rochester Medical Center, 601 Elmwood Ave, Box 647, Rochester, NY 14642, USA

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Abstract

Tumor metastases involving the iris are rare and represent about 3% of metastases to the uveal tract. The typical presentation is a patient with a known history of carcinoma who develops blurry vision, ocular pain, and/or eye redness, which may be erroneously diagnosed as uveitis. In this case, we report the workup, diagnosis, and treatment of a 76 year old man with a history of node negative multi-focal adenocarcinoma of the lung who was found to have a left iris metastasis. He presented with blurry vision and left eye pain. Exam revealed a 7 x 7 mm amelanotic ciliary body mass, which was ultimately biopsied and found to be consistent with his lung primary. He was treated with external beam radiation therapy, 3000cGy in 10 fractions, to the left globe. His three and nine-month follow up MRIs showed good treatment response and he is clinically without disease progression. EBRT is a safe and effective modality for the treatment of iris metastases.

Keywords: Iris metastasis; Uveal tract metastasis; Ocular metastasis; Radiation therapy

Introduction

Ocular metastases are rare and most often occur in the posterior uvea. Metastases to the iris represent only about 3% of all uveal metastases [1]. The primary sites that most commonly metastasize to the iris are breast, lung, carcinoid, and melanoma. Patients typically present with blurred vision, ocular pain, photophobia, redness, and in some cases a visible iris mass. Due to the infrequency with which carcinoma metastasizes to the iris, these lesions are often misdiagnosed as uveitis [2-5].

In this case report, we describe a patient who was found to have a metastatic tumor of the iris and was treated with external beam radiation therapy (EBRT) with symptomatic improvement and local control. Our Institutional Research Subject Review Board does not require informed consent from patients for a case report.

Case Presentation

A 76-year-old man underwent wedge resections of the right upper lobe, middle lobe, and lower lobe for presumed node negative multi-focal adenocarcinoma. He subsequently underwent stereotactic body radiotherapy (SBRT) for a left lung nodule in February 2020.

Near the end of March 2020, the patient developed blurry vision and left eye pain. He was seen by ophthalmology and was treated with a prednisolone ophthalmic solution for acute anterior intraocular inflammation of the left eye. His symptoms persisted, and upon further examination was found to have an amelanotic ciliary body mass with anterior uveitis concerning for a granuloma vs neoplasm. Iris angiography of the left eye revealed leakage and internal vascularization of the mass. The patient was referred to an ocular oncologist and had an FNA biopsy, which was consistent with adenocarcinoma. Additional workup with an MRI revealed a 7 x 7 mm inferotemporal nodular enhancing lesion arising from the ciliary body (Figure 1). Restaging scans also identified two pelvic osseous metastases.

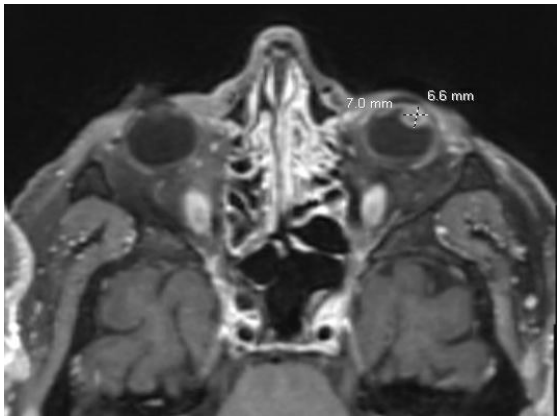

Figure 1: A pre-treatment axial MRI of the orbits revealing a left eye nodular enhancing lesion arising from the ciliary body measuring approximately 7 x 7 mm.

In September 2020, the patient underwent EBRT consisting of 3000cGy in 10 fractions to the left globe using a 3D conformal plan of 6X photons. Additionally, he was treated with palliative radiation to the two osseous metastases. He did well with treatment with no associated toxicities other than cataract formation for which he underwent left vitrectomy surgery and cataract removal five months post-radiation. A follow up MRI three months post-treatment revealed an interval decrease in size of the ciliary body metastasis, which at that time measured 3 x 7 mm (Figure 2). Nine months post-treatment, a follow up MRI showed the treated lesion to have completely resolved with no evidence of new intraocular or intraorbital metastases (Figure 3). The patient's left eye visual acuity

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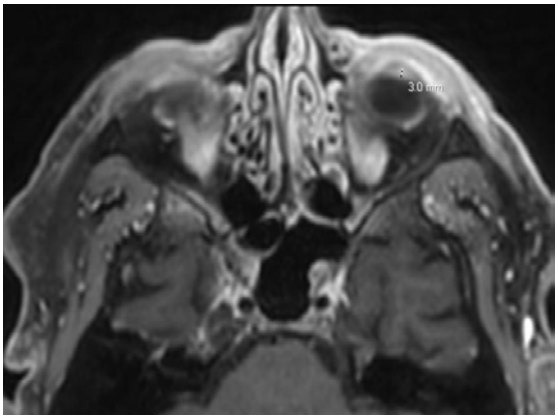

Figure 2: A 3-month post-treatment axial MRI of the orbits revealing an interval decrease in size of the left eye ciliary body lesion, measuring approximately 7 x 3 mm.

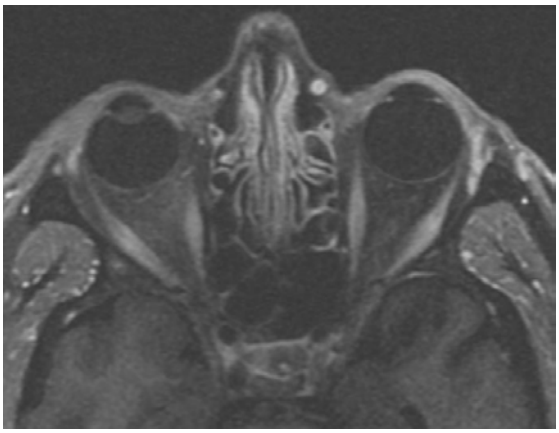

Figure 3: A 9-month post-treatment axial MRI of the orbits revealing complete interval resolution of the left eye ciliary body lesion.

improved from counting fingers from three feet pretreatment to 20/100 vision nine months post-treatment.

Discussion

Although metastatic tumors to the iris are rare, they are being recognized more often due to improved diagnostic imaging [1,6-8]. A large retrospective review at a major ocular oncology center reported on 512 patients with metastatic tumors to the uveal tract [9]. Additional extraocular metastatic disease was found in 33 of the 40 patients who had iris involvement. Occasionally, an iris lesion is the first indication of disseminated malignancy. Most metastases are from carcinomas with breast as the most common primary site, followed by lung. Melanoma occasionally metastasizes to the iris and it is extremely rare for a sarcoma or other malignancy to metastasize to the uveal tract.

An iris tumor may cause a disruption of aqueous humor to the anterior chamber resulting in secondary acute angle-closure glaucoma. As such, patients may present with blurred vision, ocular pain, photophobia, or eye redness. Some patients present with a visible iris mass [1]. The mass may appear as a yellow-to-white solitary nodule. The differential diagnosis includes nonpigmented iris lesions of adulthood, such as amelanotic melanoma, amelanotic nevus, and leiomyoma.

The workup should include a detailed ophalmoscopy of both eyes due to the possibility of additional choroidal metastasis, which has been reported in up to 35% of patients [1]. If a patient has a history of previously treated malignancy, some authors suggest the best method of diagnosis of an iris metastasis is recognition of the typical tumor with a slit-lamp biomicroscopy. If there is any uncertainty, the best ancillary study is a fine-needle aspiration biopsy of the suspicious lesion.

Many patients found to have an iris metastasis have extraocular disease and are already on systemic therapy. In this situation, local therapy is not required if the affected eye is relatively asymptomatic. If systemic therapy is not providing sufficient local control, the most accepted therapeutic option is EBRT. Plaque radiotherapy may also be appropriate and has the advantage of not subjecting the entire eye and orbit to irradiation with the tradeoff that it is more invasive. In a case series of 40 patients with iris metastases, 24 patients were treated with EBRT, four patients with plaque radiotherapy, one patient had local tumor resection, and one had enucleation [9].

In this report, we describe the diagnosis and successful treatment of an iris metastasis with EBRT. Our patient tolerated his course of radiotherapy well with good local control and even improved vision six months post-radiation compared to pre-treatment. We believe EBRT to be a safe and effective modality for the treatment of iris metastases.

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