

Ciliochoroidal Metastasis from Renal Cell Carcinoma

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Renal cell carcinoma (RCC) accounts for only 2% of all systemic malignancies in adults but is responsible for more than 10,000 deaths in the United States each year.^{1,2} Although the lung is the most common site of systemic metastasis, a peculiar feature of RCC is its ability to metastasize to unusual sites, including the gall bladder, pancreas, myocardium, and occasionally the eye and orbit.² In this article, we describe a case of RCC metastatic to the ciliary body that was successfully treated with plaque radiotherapy, and we discuss its implications on treatment outcome and prognosis.

CASE DESCRIPTION

A 64-year-old white man noted a 2-week history of blurred vision in his right eye. Ocular history disclosed anisometropic amblyopia in his left eye. Medical history revealed two previously treated cancers including primary thyroid carcinoma treated with subtotal thyroidectomy 5 years prior and without metastatic disease. Additionally, the patient had RCC with metastases to the lung, adrenal gland, and heart, treated by surgical resection and chemotherapy 1 year previously.

On ophthalmic examination, visual acuity was 20/50 in the right eye and 20/40 in the left eye with normal intraocular pressures. The left eye was unremarkable, and findings were limited to the right eye. Slit-lamp examination in the right eye showed prominent sentinel vessels over the perilimbal bulbar conjunctiva from 2 to 6 o'clock. Fundus examination of the right eye revealed an amelanotic ciliochoroidal mass measuring 16 mm x 14 mm in basal diameter with shifting exudative retinal detachment involving the inferior hemiretina (Figure 1A). The tumor was solid on ultrasonography with intralesional cavitation, and it measured 8.2 mm in thickness (Figure 1B). The clinical findings were consistent with ciliochoroidal metastasis, possibly from RCC, and ruled out amelanotic choroidal melanoma in the

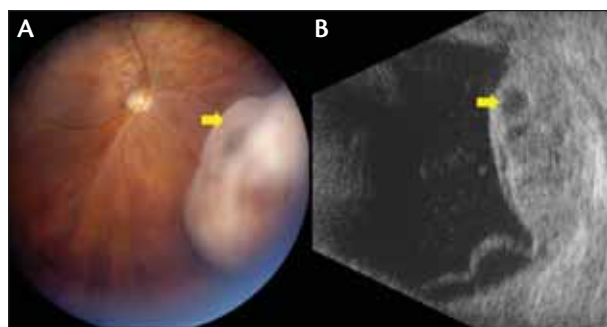


Figure 1. A 64-year-old man previously treated for metastatic renal cell carcinoma presented with a 2-week history of blurred vision in his right eye. Fundus examination (A) revealed a 16 x 14 mm ciliochoroidal mass with intralesional cavitation (arrow) and exudative retinal detachment involving the inferior hemiretina. B-scan ultrasonography (B) showed an acoustically solid mass measuring 8.2 mm in thickness with intralesional cavitation (arrow) and exudative retinal detachment.

right eye. Fine-needle aspiration biopsy confirmed the diagnosis of metastatic RCC, and treatment with plaque radiotherapy was initiated. There was tumor regression to a nearly flat scar and complete resolution of subretinal fluid by 6 month's follow-up.

DISCUSSION

Despite the high prevalence of systemic cancer, intraocular metastases are relatively uncommon, and ciliary body metastases are considered rare. Bloch and Gartner³ performed postmortem studies on 230 patients who died of systemic carcinoma and found microscopic metastasis to the eye in 12% of cases. In that same series,³ 92% of involved cases had uveal metastasis. In the largest cohort of 520 patients with uveal metastasis, Shields and colleagues⁴ reported that the most common site of involvement was the choroid (88%), followed by the iris

(9%), and the ciliary body (2%). The origin of metastatic foci to the uvea is most often from breast carcinoma in women and lung carcinoma in men, with kidney malignancies representing only 2% of cases overall.⁴

In 1988, Weiss and associates¹ studied the metastatic patterns of RCC in 687 necropsies and did not find any case of ocular metastases. In that series, patients at highest risk for metastases showed features of renal vein invasion but did not show any difference in survival time compared with patients without renal vein invasion. Metastases most often occurred in the lung (72%), liver (44%), contralateral kidney (21%), contralateral adrenal gland (20%), brain (19%), myocardium (14%), thyroid (11%), and skin (5%).

From an ophthalmic point of view, a review of 71 published cases of RCC with ocular metastases by Shome and coworkers² found the principal site to be the orbit (37%), followed by the choroid (29%), the iris (10%), and the ciliary body (6%). They also reported that the mean duration from initial diagnosis of RCC to detection of ocular metastasis was 93 months.¹

In our patient, ciliochoroidal metastasis from RCC was detected 12 months after being diagnosed with primary RCC. Although uveal metastases originating from various primary tumors are usually ophthalmoscopically indistinguishable, metastatic RCC can sometimes be suspected because it is one of the few tumors that can appear orange-red in color, is often thicker than others, and is often present with subretinal hemorrhage and exudation.⁴ Intralesional cavitation, seen in this case, is an unusual feature. Cavitation has been described in uveal melanoma and retinoblastoma and in unusual metastases from carcinoid (neuroendocrine) tumor.⁵⁻⁷

Metastatic RCC is uncommon, and 30% of affected patients will have overt metastasis at initial diagnosis.¹ In contrast to other malignancies, 35% of patients with metastatic RCC will have multiple sites of involvement, making treatment difficult.¹ Current options in management of metastatic RCC include local resection, tumor embolization, external beam radiation therapy, cytokine therapy, antiangiogenic therapy, and chemotherapy.^{2,10} When the primary tumor has already been treated and ocular metastasis is isolated, such as in our case, localized treatment with radiation is preferred. Plaque radiotherapy is ideal as tumor control is obtained in nearly all patients, and often over a 5-day period.⁸ Interestingly, spontaneous regression of choroidal RCC metastasis after nephrectomy has also been described, a phenomenon estimated to occur in up to 7% of cases.⁹ Even with treatment, the life prognosis of patients with uveal metastasis is poor. The mean survival length is 8 to 9 months for uveal metastases in general.⁸ Specifically, the most recent

National Cancer Institute Surveillance Epidemiology and End Results (SEER) estimates the 5-year survival rate of metastatic RCC to be 11%.¹¹

SUMMARY

In summary, intraocular metastasis from RCC is uncommon. The mean duration from initial diagnosis of the malignancy in the kidney to detection of ocular metastatic is almost a decade, and life prognosis is poor. Routine annual or biannual ophthalmic examination is recommended for patients with underlying primary cancers to allow early detection of metastasis and early intervention to protect vision and quality of life. ■

Support provided by the Eye Tumor Research Foundation, Philadelphia, PA.

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