

## Iris Metastasis in Small-Cell Lung Carcinoma

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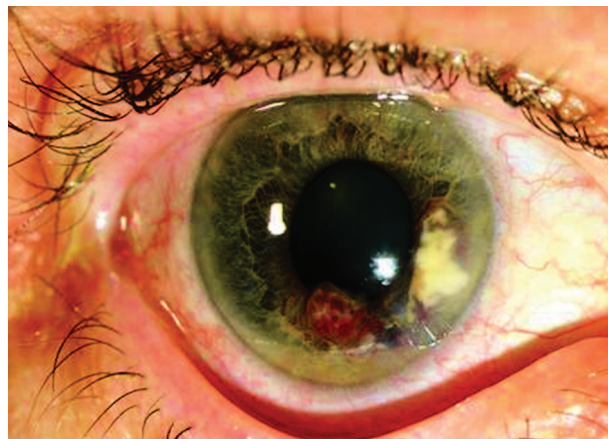
Small-cell lung cancer (SCLC) is characterized by rapid growth and early metastasis. Despite its sensitivity to cytotoxic treatment, until now treatments have failed to control or cure this disease in most patients.

Here, we describe a patient with SCLC in which symptoms caused by iris metastasis were the only sign of relapse after multimodality treatment.

**Key Words:** Iris metastasis, Small-cell lung carcinoma.

(*J Thorac Oncol.* 2007;2: 1128–1129)

A 58-year-old woman was referred to the department of Pulmonary medicine with a history of cough, dyspnea, and weight loss. Ultimately, small-cell lung cancer (SCLC) of the right lower lobe, limited disease (involvement of mediastinal lymph nodes Naruke 2, 4, and 7; there were no distant metastases), was diagnosed. She was treated with five cycles of cyclophosphamide, doxorubicin, and etoposide, and then thoracic radiotherapy (25 fractions of 2 Gy, total dose of 50 Gy) and prophylactic cranial irradiation (15 fractions of 2 Gy, total dose of 30 Gy). Appropriate field arrangements and blocking were used to shield the patient's eyes. A near-complete remission was achieved. The treatment course was complicated by an episode of radiation pneumonitis, which was treated successfully with prednisolone. Eighteen months after completion of treatment, the patient presented with a 2 weeks' history of a white spot in her right eye, without disturbance of her vision. Two amelanotic tumors in the iris were observed at the 4-o'clock and 6-o'clock meridians in the right iris, characteristic for iris metastases. One of the two lesions showed prominent blood vessels (Figure 1). Intraocular pressure was not elevated, and fundoscopy was normal. No abnormalities were found on examination of the left eye. Restaging, including laboratory examinations, chest x-ray,



**FIGURE 1.** Two amelanotic tumors in the iris at the 4-o'clock and 6-o'clock meridians, characteristic for an iris metastasis. One of the two lesions shows prominent blood vessels

and magnetic resonance imaging of the cerebrum, did not show a local recurrence or other distant metastases. Given the characteristic appearance, in combination with the history of SCLC, a biopsy was not taken.

The iris metastases were treated with external beam radiotherapy, using a 6-MV photon linear accelerator. Using two wedged fields coming from the caudal and cranial directions, the right eye was irradiated with 25 fractions of 1.8 Gy, with a total dose of 45 Gy. After 25.2 Gy, the iris metastases decreased in size, and the pain vanished. At a dose of 41.4 Gy, a further regression of the metastases was observed. As a result of radiotherapy, secondary glaucoma developed and was resistant to local therapy. Ultimately, enucleation of the right eye was performed 18 months after radiotherapy. Pathologic examination of the removed eye still showed active, metastatic SCLC (Figure 2).

Five years after the initial presentation, the patient is alive without other recurrences of her disease.

### DISCUSSION

Metastases to the central nervous system are a frequent complication in the clinical course of SCLC. At autopsy, up to 50% of the patients with SCLC have intracranial metastases.<sup>1</sup> Of all ocular metastases, uveal metastasis is the most common form of ocular malignancy. The choroid is the most common site for uveal metastasis; metastasis to the ciliary body, retina, optic disc, vitreous, and iris are rare.<sup>2</sup> Metastasis

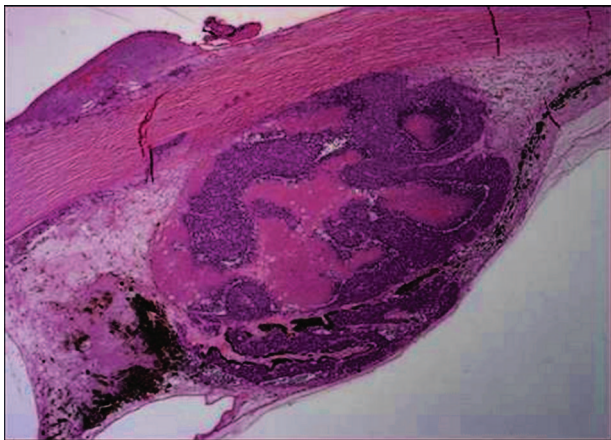
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Disclosure: The authors declare no conflict of interest.

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ISSN: 1556-0864/07/0212-1128



**FIGURE 2.** Low-power view of one of the metastatic lesions. The tumor is located in the ciliary body. Vital areas of the tumor (blue) alternate with necrotic fields (pink). Hematoxylin/eosin stain, 20 $\times$ .

to the iris can be easily confused with uveitis of nonmalignant origin. Lung and breast cancer represent more than two thirds of the primary tumor sites. Approximately one third of the patients have no history of primary cancer at the time of ocular diagnosis.<sup>3,4</sup> The iris mass was the first sign of metastatic disease in more than three quarters of the patients in a study from Shields and coworkers.<sup>3</sup> In this study, coexisting brain metastases were detected on computed tomography or magnetic resonance imaging in 44% of the patients with iris metastasis. After diagnosing solitary iris metastasis, the majority of patients subsequently develop clinical evidence of systemic metastasis in a few months.<sup>3</sup> Iris metastasis most often are unilateral, but bilateral metastases do occur.<sup>4</sup>

The chief complaints with iris metastases are blurred vision, ocular pain, redness, visible iris mass, or photophobia. Iris metastasis present most often as a yellow-white solitary

nodule in the inferior quadrant.<sup>3</sup> The differential diagnosis includes nonpigmented lesions such as amelanotic melanoma, amelanotic nevus, granulomatous iritis, lymphoma, leukemia, and leiomyoma.<sup>3</sup> The diagnosis of iris metastasis generally is based on historical and clinical findings. A rapidly enlarging mass in the presence of a history of a previously treated malignancy should raise the suspicion of an iris metastasis. If the diagnosis is uncertain, fine-needle aspiration biopsy of the iris mass can be used for cytologic verification.<sup>5</sup>

The management of uveal metastasis is focused on palliation and preservation of eye function. When there is systemic involvement, treatment consists of systemic therapy. If local control is not achieved, or when there is a solitary uveal metastasis, external beam radiation or plaque radiotherapy is the treatment of choice. Enucleation is only recommended when the eye becomes blind and painful.<sup>3</sup>

Survival times for patients with iris metastasis from lung carcinoma range from 1 to 18 months, with a mean of 7 months and a median of 4 months.<sup>3</sup> Our patient is still alive 3 years after the diagnosis of iris metastasis.

In conclusion, iris metastases of SCLC are very rare and can be considered as central nervous system metastases. Treatment with radiotherapy usually provides good palliation, but sometimes enucleation is necessary.

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