Unusual case of iris metastases from breast carcinoma

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A 46-year-old white woman with a history of breast carcinoma presented at our clinic with new lesions of the left iris, anterior uveitis, and headache. Imaging of the head and orbits showed metastatic breast carcinoma of the brain. Iris lesions were diagnosed as metastatic breast carcinoma based on clinical presentation. The patient was treated at an outside facility with systemic chemotherapy and radiation therapy while simultaneously being managed with steroid eyedrops for intraocular inflammation. Her condition and vision improved over a 3-month period.

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Breast cancer affects approximately 1 in 8 women in the United States. Although iris tumors represent a rare entity in ophthalmic practice, iris metastasis must be in the differential in patients with known metastatic breast cancer. One unusual case of iris metastases is discussed below as well as the most common presentation, associated findings, treatment, and prognosis.

CASE REPORT

A 46-year-old white woman noted a pink spot on the iris of her left eye over 4 days accompanied by an intermittent left-side headache. She had a medical history of non-insulin dependent diabetes mellitus and had been diagnosed with stage IV breast cancer 21 months earlier. A 3 cm mass in the right breast had been found to be a poorly differentiated invasive ductal carcinoma. Further testing at the time revealed satellite lesions in the right axillary and subpectoral lymph nodes as well as 2 left hepatic lobe lesions. The patient had completed 4 cycles of chemotherapy and radiation therapy with good resolution and with no complications. She had started a course of capecitabine 9 months before presentation.

On examination, the corrected distance visual acuity (CDVA) was 20/20 in both eyes. The left pupil was slightly irregular with pupillary peaking at 8 o'clock at the pupillary margin. There was a 1.2 mm x 1.5 mm white fluffy fibrous mass of the iris stroma adjacent to the area of pupillary peaking seen by slitlamp biomicroscopy (Figure 1). Intraocular pressure (IOP) by applanation was 18 mm Hg in both eyes. Gonioscopic examination of both eyes revealed no tumor extension into the angle of the left eye but with heavier pigment than in the fellow eye (Figure 2). Ultrasound biomicroscopy showed a solid mass infiltrating the iris.

Brain magnetic resonance imaging revealed numerous new lesions in the cerebellum, pons, cerebrum, and an osseous metastatic deposit of the left greater sphenoid wing. The chemotherapeutic regimen was switched to carboplatin and gemcitabine, and external beam radiotherapy was initiated immediately. The patient's initial ophthalmic course was remarkable for waxing and waning of satellite lesions adjacent to the original metastatic iris focus that varied with chemotherapeutic cycles (Figures 3 and 4). At the 2-month follow-up, the patient noted blurred vision and eye pain in the left eye. The CDVA had decreased to 20/30 in the left eye with a 3.0 diopter myopic shift and an inflammatory reaction including ciliary flush, 2+ anterior chamber cells, and increased IOP. Topical steroids were initiated for presumed microscopic tumor lysis of the iris metastases.

The patient was followed closely, and the intraocular inflammation, ocular hypertension, and myopic shift resolved over the subsequent 3 months. The CDVA returned to 20/20. There was visible regression of all but 1 satellite lesion and contraction of the original iris mass (Figure 5).

DISCUSSION

Metastatic tumors to the iris are an indisputably rare finding, but the judicious ophthalmologist should maintain a high index of suspicion for metastases when a new iris lesion is discovered. Metastases are the most common intraocular malignancy of the
eye; most authors indicate breast carcinoma as the most common cause.\textsuperscript{3–7}

The majority of intraocular metastases from breast carcinoma affect the choroid. A retrospective chart review of 264 patients with uveal metastasis by Demirci et al.\textsuperscript{8} reported that 85\% had choroidal involvement and only 3\% had iris metastasis. Amicchetti et al.\textsuperscript{9} reported that 70\% of 49 patients had choroidal involvement caused by breast cancer. A review by Shields et al.\textsuperscript{2} of solely iris metastatic lesions noted that 40\% of iris lesions were from breast cancer.

The reported frequency of breast cancer metastasis to the eye varies greatly. In postmortem studies, Bloch and Gartner\textsuperscript{10} observed ocular metastases in 37\% of 52 patients who died of breast cancer and Ferry and Font\textsuperscript{7} found a similar incidence of ocular metastases in 41\% of patients who died of breast cancer. Clinical studies by Mewis and Young\textsuperscript{10} described an incidence of symptomatic choroidal metastasis of approximately 26\% in patients with breast cancer and 9\% with choroidal metastases in asymptomatic patients.

Wiegel et al.\textsuperscript{11} screened 120 visually asymptomatic patients who had had radiation therapy for disseminated breast cancer and found that 6 (5\%) had asymptomatic choroidal metastasis. Fenton et al.\textsuperscript{12} performed a prospective study of 68 women with disseminated breast cancer who were being treated with chemotherapeutic and/or hormonal regimens and found that 5.8\% had ophthalmic manifestations, but none had uveal metastases. This variability in incidence is generally thought to be a consequence of the lack of routine ocular screening in breast cancer patients.\textsuperscript{8} The variability may argue for the need for further prospective analysis.

Shields et al.\textsuperscript{5} demonstrated ocular metastases in 7\% of patients as the initial manifestation of breast cancer. In an additional study of metastatic iris lesions by Shields et al.,\textsuperscript{2} iris tumors were found to be the first evidence of systemic metastases in 18\% of patients, although the patient population was collected from a tertiary referral center and may not reflect the general population. Other case series have
Breast carcinoma should be treated with traditional chemotherapeutic and hormonal regimens, but these therapies are not necessarily protective for all metastatic disease. Treatment alternatives include observation, particularly in the terminally ill, external beam radiotherapy, plaque radiotherapy, and gamma knife radiation therapy. In some trials, researchers found that ocular metastasis from breast cancer was responsive to external beam radiotherapy; ie, external beam radiotherapy demonstrated an ability to promote regression of lesions, improve vision, and prevent secondary glaucoma and pain in patients with uveal metastasis.

Furthermore, ocular metastasis are associated with an increased incidence of concurrent central nervous system metastasis. Survival rates after diagnosis of ocular metastases are often poor with most studies reporting death after 13 to 21 months.

In summary, this is a rare case of iris metastases from breast carcinoma. The multifocal and rapid presentation should alert the clinician to suspect metastases in any unusual anterior segment lesion. We advocate rapid workup, including neuroimaging, which has the potential to alter metastatic treatment regimens to reduce overall tumor load and improve quality of life.

REFERENCES

1. Pérez-Fidalgo JA, Arteaga JV, Chirivella González I, Martínez Belda R, Bermejo de Lasheras B, Roselló Kerán S, Fons Moreno A, Lluch Hernández A. Metástasis en iris de un carcinoma de mama: ¿modifica el tratamiento la historia natural de la enfermedad? [Breast cancer metastases in the iris: does treatment modify natural history of the illness?] An Med Interna 2008; 25:178–180. Available at: http://onlinelibrary.wiley.com/doi/10.1002/1097-0142(19910801)68:3%3C623::AID-CNCR2820680330%3E3.0.CO;2-L/pdf. Accessed October 22, 2014.

2. Shields JA, Shields CL, Kiratli H, de Potter P. Metastatic tumors to the iris in 40 patients. Am J Ophthalmol 1995; 119:422–430.

3. Soysal HG. Metastatic tumors of the uvea in 38 eyes. Can J Ophthalmol 2007; 42:832–835.

4. Merrill CF, Kaufman DI, Dimitrov NV. Breast cancer metastatic to the eye is a common entity. Cancer 1991; 68:623–627. Available at: http://onlinelibrary.wiley.com/doi/10.1002/1097-0142(19910801)68:3%3C623::AID-CNCR2820680330%3E3.0.CO;2-L/pdf. Accessed October 22, 2014.

5. Shields CL, Shields JA, Gross NE, Schwartz GP, Lally SE. Survey of 520 eyes with uveal metastases. Ophthalmology 1997; 104:1265–1276.

6. Shields JA. Metastatic tumors to the uvea. Int Ophthalmol Clin 1993; 33(3):155–161.

7. Ferry AP, Font RL. Carcinoma metastatic to the eye and orbit. I. A clinicopathologic study of 227 cases. Arch Ophthalmol 1974; 92:276–286.

8. Demirci H, Shields CL, Chao A-N, Shields JA. Uveal metastasis from breast cancer in 264 patients. Am J Ophthalmol 2003; 136:264–271.

9. Bloch RS, Gartner S. The incidence of ocular metastatic carcinoma. Arch Ophthalmol 1971; 85:673–675.

10. Mewis L, Young SE. Breast carcinoma metastatic to the choroid: analysis of 67 patients. Ophthalmology 1982; 89:147–151.
11. Wiegel T, Kreusel KM, Bornfeld N, Bottke ND, Stange M, Foerster MH, Hinkelbein W. Frequency of asymptomatic choroidal metastasis in patients with disseminated breast cancer: results of a prospective screening programme. Br J Ophthalmol 1998; 82:1159–1161. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1722389/pdf/v082p01159.pdf. Accessed October 22, 2014

12. Fenton S, Kemp EG, Harnett AN. Screening for ophthalmic involvement in asymptomatic patients with metastatic breast carcinoma. Eye 2004; 18:38–40. Available at: http://www.nature.com/eye/journal/v18/n1/pdf/6700535a.pdf. Accessed October 22, 2014

13. Woog JJ, Chess J, Albert DM, Dueker DK, Berson FG, Craft J. Metastatic carcinoma of the iris simulating iridocyclitis. Br J Ophthalmol 1984; 68:167–173. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1040280/pdf/brjophthal00147-0033.pdf. Accessed October 22, 2014

14. Höche A, Blum M, Semeniuk C, Lorenz P, Kosmehl H, Strobel J. Sekundärglaukom durch Iristumor [Secondary glaucoma caused by iris tumor]. Ophthalmologe 1999; 96:342–343

15. Duke JR, Kennedy JJ. Metastatic carcinoma of the iris and ciliary body. Arch Ophthalmol 1958; 60:1092–1103

16. Ratanatharathorn V, Powers WE, Grimm J, Steverson N, Han I, Ahmad K, Lattin PB. Eye metastasis from carcinoma of the breast: diagnosis, radiation treatment and results. Cancer Treat Rev 1991; 18:261–276

OTHER CITED MATERIAL
A. American Cancer Society. What are the key statistics about breast cancer? Atlanta, GA, American Cancer Society, 2014. Available at: http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-key-statistics. Accessed October 22, 2014

B. Amichetti M, Caffo O, Minatel E, Roncadin M, Panizzoni G, Balli MC, Valli M, Lozza L, Zucali R. “Intraocular Metastases From Breast Cancer: A Retrospective Study of the Breast Cancer North Italian Radiation Therapy Oncology Group,” poster presented at the 1st European Breast Cancer Conference, Florence, Italy, September 1998. Abstract in Eur J Cancer 1998; 34:S60–S61