

## **Unilateral Symptomatic Choroidal Metastasis as the Initial Presentation of Advanced Breast Carcinoma**

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**Breast carcinoma is the most common cancer in women and second leading cause of cancer death among women in developed countries. Breast carcinoma is the most common primary tumor to metastasize to ocular structures. The high incidence of breast carcinoma and prolonged survival due to effective treatment may in part explain its metastatic frequency and will invariably increase the number of breast cancer patients presenting to the ophthalmologist. This is the first case report from Jordan of a breast carcinoma metastasizing to the choroid. This case highlights a rarity in the presentation, and shows that the impaired vision can be the alarming initial symptom in an asymptomatic breast cancer patient.**

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Breast carcinoma is the most common primary tumor in symptomatic choroidal metastasis (CM)<sup>1</sup>. The incidence of choroidal metastatic breast carcinoma is 0-9.7% in clinical trials and up to 30% in histopathological trials<sup>2</sup>. The occurrence of CM in patients with breast carcinoma indicates the presence of advanced metastatic disease and poor prognosis<sup>3</sup>. The overall survival time of these patients is poor with a median of 8-12 months for all patients and 15-17 months for patients with breast cancer<sup>4</sup>. This may justify the need for screening other organs and further systemic therapy for metastatic disease. However, the need for screening for asymptomatic CM among patients with disseminated disease continues to be a matter of controversy because of the high cost and low incidence<sup>2,5</sup>. Early detection of CM is of great significance as it would lead to early implementation of appropriate therapeutic management to avoid blindness and enucleation. Localized orbital radiotherapy, systemic chemotherapy, and hormonal (tamoxifen) therapy may cause regression of CM, maintain the visual acuity, and improve the quality of life.

The aim of this report is to present an unusual case of choroidal metastatic breast carcinoma in a previously fit and well young lady.

### **THE CASE**

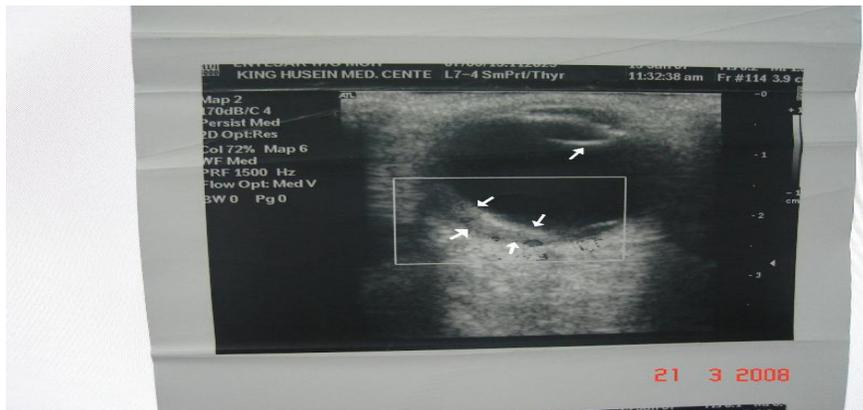
A previously fit and well 38-year-old woman presented to the Ophthalmology outpatient clinic with a three-month history of gradual painless, decrease in vision of her right eye.

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There were no other visual symptoms. On examination, the visual acuity of the right eye was reduced to 6/36 as compared to 6/6 of the left eye. The intraocular pressure was within normal limits in both eyes. Funduscopy under pupil dilatation of the right eye revealed a well-circumscribed, elevated mottled lesion above the macula with some pigmented clumping.

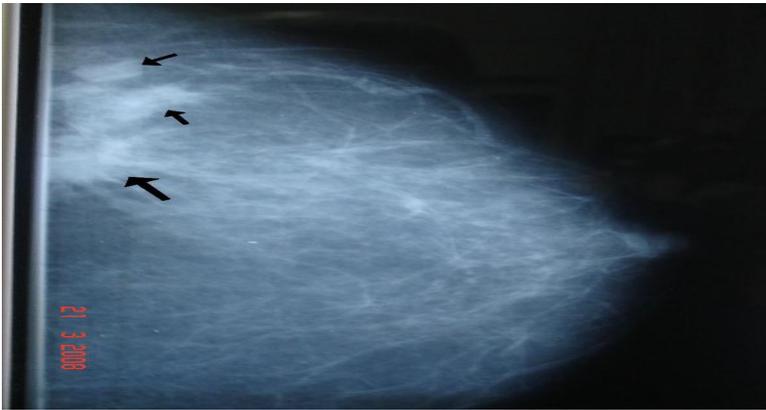
The patient was referred to the Radiology department for further evaluation. B-scan ultrasound of the right eye (Figure 1) showed the lesion to be solid, with retinal detachment. The differential diagnosis at that stage was a melanoma or a metastatic lesion.



**Figure 1: B-scan Ultrasound of the Right Eye Showing Posterior Orbital Thickening Representing Metastasis and Retinal Detachment**

Chest X-ray, abdominal and pelvic ultrasounds were normal. The magnetic resonance imaging (MRI) of the brain and the orbit showed multiple enhancing lesions of variable sizes in the cerebellar hemispheres, midbrain and right tentorial region representing metastatic deposits, in addition to enhancing lesions in the right orbit representing orbital infiltration.

Breast ultrasound showed multiple irregular hypoechoic lesions in the left breast, with multiple enlarged left axillary lymph nodes. Mammography (Figure 2) revealed the presence of multiple speculated masses in the upper outer quadrant of the left breast with multiple dense left axillary lymph nodes. Ultrasound-guided fine needle aspiration and Tru-cut needle core biopsy from the largest left breast mass were performed and confirmed the presence of grade III invasive intraductal carcinoma, with intermediate-to-high grade in-situ ductal carcinoma. The primary breast tumor was estrogen receptor positive.



**Figure 2: Mammogram of the Left Breast Showing Multiple Speculated Masses**

No evidence of any other primary lesion was detected by clinical physical examination and other radiological investigations.

Whole body positron emission tomography (PET)/computed tomography (CT) scan showed increased  $^{18}\text{F}$ Fluorine-Deoxy-Glucose (FDG) uptake in the right scapula and right iliac bone consistent with bony metastases.

A final diagnosis of breast carcinoma metastasizing to the right eye, brain and bones was confirmed.

The patient was treated with radiotherapy to the right orbit and systemic hormonal (tamoxifen) therapy. On subsequent follow-up visits during one year, mammography and breast ultrasound showed significant regression of breast masses, ultrasound of the right eye showed regression of the orbital mass, and improvement of visual acuity was observed.

## **DISCUSSION**

Breast carcinoma metastasizes to the eye more frequently than is clinically recognized. All reported series suggest that breast carcinoma accounts for the great majority of intraocular metastasis<sup>6</sup>. Secondary metastatic disease is usually intraocular with the choroid being the commonest site due to its high vascularity and possibly other unknown contributing factors, followed by orbit, iris, and ciliary body, optic nerve, conjunctiva, and eyelid. Although the extraocular or orbital metastases from breast carcinoma are less common, they have been reported<sup>7</sup>. In those patients with ocular metastasis, the systemic prognosis is poor, with an overall survival rate of 24% at 5 years<sup>1</sup>.

In several large studies, ocular metastasis from breast carcinoma was the initial sign of disease in 4-46% of patients, or the initial site of systemic metastasis in 12-31% of patients<sup>1</sup>. This may emphasize the importance of routine ocular examination for patients with breast cancer. In a recent study, ophthalmic manifestations occurred in 5.8% of visually asymptomatic patients with locally advanced or metastatic breast carcinoma; however, no CM was detected<sup>8</sup>. Although metastatic disease of the choroid is well

reported, it is extremely rare for the eye symptoms to be the initial presenting complaint for primary breast malignancy<sup>9,10</sup>.

The median presentation for CM is in the sixth decade of life and occurs on average 4.5-5.5 years after primary tumor diagnosis, and the majority has concomitant non-orbital metastases at the time of presentation<sup>8</sup>. On the contrary, the patient described in this report was in a relatively younger age group; however, she also had brain and bone metastases at the time of presentation. CM was described as predominantly unilateral (63%), solitary (57% affected eyes), and the first sign of metastatic tumor disease in 32% of patients<sup>3</sup>. Similarly, our patient had a unilateral solitary metastatic lesion in her right eye.

The true incidence of CM from breast carcinoma has been difficult to estimate and varies widely among different studies. This might be explained by the facts that the involvement and consequences of spread to major organs such as lung, liver, or bone is more common; CM is very small and asymptomatic, and that there is a lack of routine screening for all breast cancer patients. Wiegel et al reported 7% incidence of CM in disseminated breast cancer<sup>4</sup>. However, the incidence increased to 11% in patients with metastases from more than one site and specifically with lung and brain metastases as compared with patients with only one site of metastases. Fenton et al did not support this finding as they found no CM in their patients with brain and lung metastatic disease<sup>8</sup>. This might be explained by the smaller number of patients examined in Fenton's study.

It was also reported that the clinical incidence of symptomatic CM in breast cancer is smaller than that predicted in prevalence data obtained from ocular screening studies on patients with metastatic breast cancer<sup>3</sup>. This may be due to advanced metastatic disease, an asymptomatic course of ocular involvement, or unintended treatment of CM in the course of systemic therapy of the metastatic tumor disease.

CM occurs most frequently from the breast in females and from the lungs in males<sup>11</sup>. Women are more affected than men<sup>12</sup>. Breast carcinoma in males is very rare accounting for 1% of all breast carcinomas and the disease occurs at a later age in men; therefore, CM in males is still rarer<sup>13</sup>. However, breast carcinoma in males should be considered as a possible primary cancer in cases of CM. Breast carcinoma in males has a higher concentration of estrogen and progesterone receptors than in females, thus rendering both the primary and metastases more susceptible to hormonal therapy (tamoxifen)<sup>14</sup>.

It has been reported that systemic hormonal therapy like tamoxifen given for the breast primary and other systemic metastases may cause regression of CM<sup>15</sup>. Similarly, our patient showed a significant therapeutic response on her subsequent follow-up visits, as demonstrated by regression of breast masses, and improvement of visual acuity.

## **CONCLUSION**

**Metastatic tumors to the eye have been increasingly detected as a result of extended survival rate of cancer patients as well as improved clinical techniques in**

**discovering previously undetectable small lesions. Ophthalmological presentation could be secondary to metastatic disease or as a complication of treatment therapy or both. Therefore diagnosing ocular metastatic disease requires a high index of suspicion especially in female patients with or without a history of breast cancer.**

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