

CASE REPORT

Metastatic Breast Carcinoma to the Superior Oblique in a Male

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ABSTRACT

We describe a case of breast cancer metastatic to the superior oblique, in a male. The patient was a 66-year-old Caucasian male with a history of stage IIIB rectal adenocarcinoma and stage IIA left breast carcinoma diagnosed 12 years and 5 years prior, respectively, who presented with headaches and intermittent diplopia. He underwent left total mastectomy with sentinel lymph node biopsy 6 years prior, which showed ER/PR+, HER2/neu–, moderately-differentiated, infiltrating ductal carcinoma with 3/14 positive nodes. He completed adjuvant doxorubicin/cyclophosphamide and oral tamoxifen, and prior routine surveillance imaging had found no evidence of recurrent disease. MRI of the orbit revealed a $0.7 \times 1.4 \times 1.9$ cm mass in the superomedial right orbit in the region of the superior oblique. Transcaruncular orbitotomy with biopsy of the superior oblique revealed metastatic breast carcinoma. Unfortunately, he developed new metastases. Post-operatively, he

continues to have good vision with minimal diplopia.

Keywords: Male breast cancer; Metastatic breast cancer; Orbital metastasis; Superior oblique

INTRODUCTION

Male breast cancer is a rare disease that accounts for 0.5–1% of all breast cancers in the United States and roughly 0.1% of male cancers [1, 2]. The incidence of male breast cancer has been increasing by approximately 1.1% per year [3]. In females, breast cancer is among the most common metastases to the orbit. Due to the rarity of male breast cancer, there have been four previous case reports of breast cancer orbital metastases in men, two of which have extraocular muscle involvement [4–7]. Herein, the authors report a case of metastatic breast cancer to the superior oblique in a male patient. The collection and evaluation of protected patient health information for this report were HIPAA-compliant.

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CASE REPORT

A 66-year-old Caucasian male presented with chief complaints of headaches and intermittent

horizontal binocular diplopia of several months duration. He had a remote history of stage IIIB moderately-differentiated rectal adenocarcinoma 12 years prior and was status post limited neoadjuvant radiation and low anterior resection. Six years prior to presentation, a palpable nodule of his left breast led to a diagnosis of stage IIA breast carcinoma. A PET scan only showed a tumor within the left breast. He underwent left total mastectomy with sentinel node biopsy. Pathology showed a 2.0×1.5 cm breast mass, moderately-differentiated, infiltrating ductal carcinoma (ER/PR positive, HER2/neu negative). Pathology margins were negative, but 3/14 nodes were positive. Genetic testing for mutations in BRCA1/2 was negative. He completed adjuvant doxorubicin/cyclophosphamide (four cycles), paclitaxel (two cycles) and oral tamoxifen (for total of 2.5 years; stopping early due to development of deep venous thrombosis). Subsequent surveillance mammographies did not show evidence of recurrent disease.

At the time of presentation to our clinic, he also was being evaluated for a new lump in his left neck as well as some fullness to his left axilla. He denied any significant weight loss or other systemic symptoms.

Examination demonstrated normal afferent visual pathways. His motility was full with a small exophoria at near. External exam was notable for 1 mm of relative right-sided proptosis without evidence of a palpable mass or hypoglobus. He had mild right blepharoptosis with compensatory brow elevation. MRI brain obtained prior to oculoplastic consultation revealed a $0.7 \times 1.4 \times 1.9$ cm mass in the superomedial right orbit that appeared to be enlargement of the superior oblique muscle (Fig. 1). It appeared to be isointense to skeletal muscle on T1-weighted imaging, intermediate on T2-weighted imaging and homogeneously enhanced after intravenous contrast. Transcaruncular incision was made with Westcott scissors. Tenotomy scissors were used to spread along the posterior lacrimal crest, and a Freer elevator was used to lift the periosteum. The periosteum was next opened, and a 0° nasal endoscope was used to identify a mass within the enlarged superior oblique muscle.

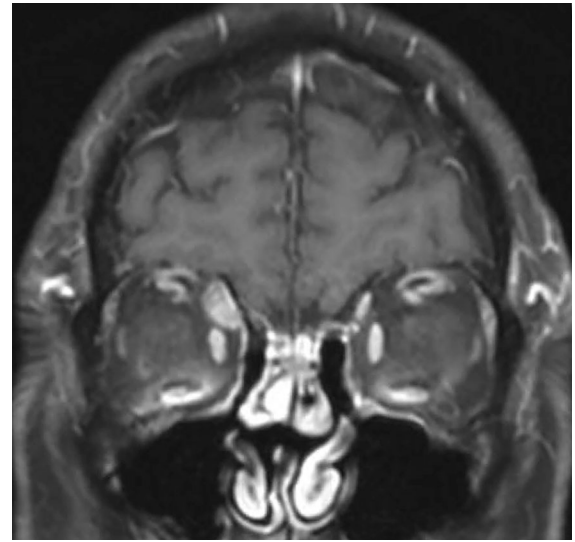


Fig. 1 T1 post-contrast coronal MRI of the orbits. There is a $0.7 \times 1.4 \times 1.9$ cm mass in the right orbit indistinguishable from the superior oblique muscle. This is isointense to skeletal muscle on T1 imaging and homogeneously enhancing after intravenous contrast

Takahashi forceps were used to engage the mass, and several specimens were obtained with Yasargil microneurosurgical scissors. The tissue was a pink, rubbery mass and histopathology was consistent with metastatic breast ductal adenocarcinoma (Fig. 2). Similar to his primary tumor, the orbital mass was ER/PR positive and Her2/neu negative. A PET scan performed in November of 2015 showed mild hypermetabolism in the 9 mm subcutaneous mass in the left anterior chest wall. Biopsy of that mass was also consistent with metastatic breast adenocarcinoma. There were additional areas of hypermetabolism within the soft tissue adjacent to the left sternocleidomastoid muscle, left platysma muscle, three additional small masses near subcutaneous fat near the right scapula, a 7 mm mass near Gerota's fascia on the left, and multiple left hilar lymph nodes. He was subsequently started on letrozole. Unfortunately, further imaging found osseous metastasis. Eight months post-operatively, he continues to have good vision with minimal diplopia. He remains on letrozole for systemic treatment.

Informed consent was obtained from the patient for being included in the study, for

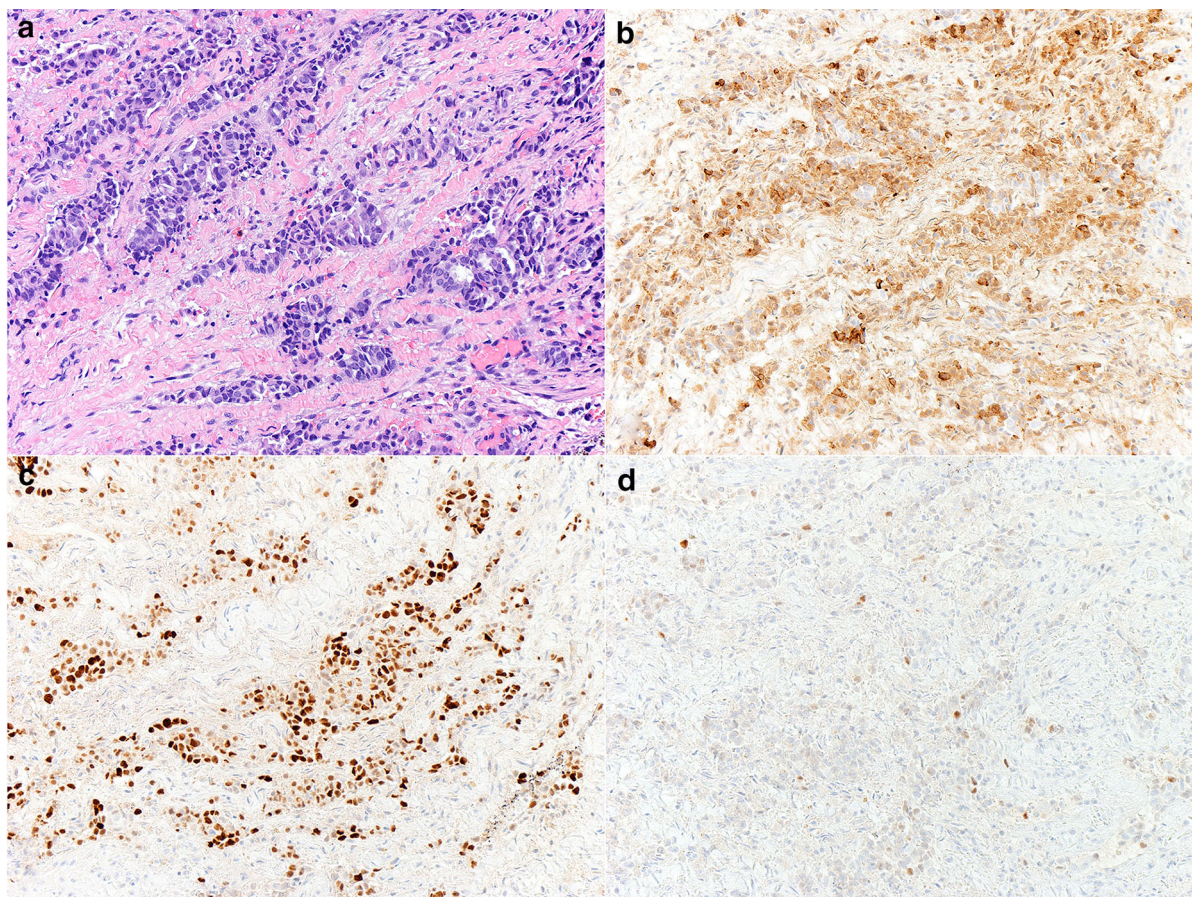


Fig. 2 Histopathology with widespread infiltration of the orbital tissues by broad cords of tumor cells which form occasional glandular structures H&E, $\times 100$ (a). The tumor cells are positive on immunohistochemistry for

BRST-2, $\times 100$ (b). Staining for estrogen and progesterone receptors are 95% positive, $\times 100$ (c), and 2% positive, $\times 100$ (d), respectively

publication of the case and accompanying figures.

DISCUSSION

Male breast cancer is a rare condition that can have higher mortality compared to the female equivalent [2, 8]. Male breast cancer has unique characteristics that differ from their female counterparts. They tend to express estrogen and progesterone receptors, have different cellular distribution, and have unique risk factors [2].

In a retrospective observational case series, Scartozzi et al. found 7% of all orbital lesions to be metastatic tumors to the orbit, 48% of which

were metastatic breast carcinoma [9]. With regards to specific extraocular muscle involvement, a handful of cases of bilateral infiltrative breast carcinoma to the extraocular muscles have been described in women [10–14]. Only two cases, however, have been reported in men [4, 7]. First described in 1986, one male patient had simultaneous bilateral uveal and unilateral orbital (medial rectus muscle and distal two-thirds of the optic nerve) metastatic breast carcinoma [4]. In 2004, Possinger et al. described another case of infraorbital metastases that infiltrated the left inferior rectus 2 years after the diagnosis of stage 4 breast cancer [7]. Other male orbital cases involved bilateral retrobulbar orbital metastatic disease that eventually led to a diagnosis of primary breast carcinoma [5, 6].

Clinical presentation of male breast cancer differs, and the time frame between primary diagnosis and orbital metastasis can vary widely. Male breast cancer can either be diagnosed as local disease or at time of metastases. In more than half of the cases, metastatic disease is found in lymph nodes at time of presentation, as in our patient [15]. Metastatic breast carcinoma can involve any of the extraocular muscles and can present as nodular, fusiform with tendon sparing or diffuse with tendon involvement [13].

For metastatic male breast cancer, hormonal manipulation remains the first line treatment and cytotoxic chemotherapy remains second line [2]. Letrozole, a third generation aromatase inhibitor, has been shown to be effective in the treatment of metastatic male breast cancer [16].

While rare, male breast cancer can metastasize to the orbit. The literature on orbital metastasis is scant, but the oncology literature recognizes breast adenocarcinoma to behave differently in men, and treatment options vary.

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Compliance with Ethics Guidelines. Informed consent was obtained from the patient for being included in the study, for publication of the case and accompanying figures.

Data Availability. Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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