

## Case 13074

### Extraocular orbital metastases as only site of metastatic spread from breast cancer: Case report

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**Section:** Neuroradiology

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**Patient:** 42 year(s), female

## Clinical History

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A 42-year-old woman presented with swelling, diplopia, and pain in her right eye. She had been diagnosed with left breast cancer (invasive lobular carcinoma) 2 years before. She had been treated with left mastectomy followed by postoperative external beam radiation of the thoracic wall and chemotherapy. The patient's further clinical course was uneventful.

## Imaging Findings

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Fig 1: Axial T1WI (a), T2WI (b) and STIR (c, d). An infiltrative lesion is seen, involving the intra-conal fat, extraocular muscles, preseptal periorbital soft tissue, with inferior extension into the infraorbital subcutaneous tissue (arrow). The lesion displays low signal on T1WI, and T2WI, with high signal on STIR.

Fig 2 (a-c): Axial, coronal and sagittal post-contrast fat suppression T1WI revealed abnormal

enhancement of the right orbital soft tissues, including the intraconal fat, extraocular muscles, and preseptal periorbital soft tissue.

The pathology report confirmed the diagnosis of a metastatic poorly differentiated invasive lobular carcinoma of the breast.

## Discussion

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Orbital metastases are relatively uncommon, the incidence ranging from 1 to 13% [1]. Breast cancer is the most common tumour that metastasizes to the orbit (48% - 53% of orbital metastases) followed by prostate carcinoma, melanoma and lung cancer [2].

Patients frequently present with proptosis, diplopia, pain, exophthalmus and a visible or palpable mass in the orbital or periorbital region [3]. However, patients with scirrhous breast carcinoma may present with enophthalmos due to desmoplasia [4]

At imaging it may be difficult to define the prime tissue site of metastasis, as by the time of radiologic evaluation, the disease may have infiltrated orbital muscles, fat, and bone. Nevertheless, different malignancies have tendencies toward localizing to certain tissues. Breast cancer typically involves orbital fat and muscles, prostate cancer usually disseminate to bone, and melanoma has strong preference for muscles [5].

Extraocular orbital metastases are usually unilateral [6]. CT or MRI of orbits show the presence of a mass, often involving the orbital fat or extraocular muscles. Lesions show variable appearance, ranging from well-defined rounded to diffusely infiltrating lesions [7]. On CT, lesions are isodense to muscles, with homogeneous post-contrast enhancement [8]. Metastatic disease involving the retrobulbar fat is usually hypointense on T1WI, intermediate to low on T2WI [2]. Extraocular muscle involvement presents as diffuse muscle enlargement that involves the tendinous insertion [4].

Diagnosis of orbital metastases is challenging; differential diagnostic considerations include thyroid ophthalmopathy, which is often bilateral and spares tendinous insertions [3]. Orbital pseudotumour is typically painful and involves the tendinous insertions [2]. In lymphoma the majority of lesions are unilateral and often extraconal [2]. The most commonly infiltrated structures are the lacrimal gland, the superior and lateral rectus muscles, and the eyelid [9]. In granulomatous disease, such as sarcoidosis, there is diffuse infiltration of the extraocular muscles, optic nerve, optic chiasm, or lacrimal gland together with dural thickening [10-11].

Definite diagnosis of orbital metastases requires an orbital biopsy. Biopsy should only be performed in patients with no previous history of cancer. Also in patients in whom the orbit is the only site of suspected metastasis, as having a definite diagnosis would change the overall patient's management [6].

The prognosis of patients with orbital metastasis is poor. Even if the orbit is the only site of

metastases, there is a high possibility of further distant metastases in other organs [3]. Treatment is usually palliative, focusing on symptom relief and improvement of orbital function. Treatment includes radiotherapy, chemotherapy, hormonal therapy, or surgery in selected patients [3].

## Final Diagnosis

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Orbital metastases from breast carcinoma

## Differential Diagnosis List

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Orbital pseudotumour, Thyroid ophthalmopathy, Orbital lymphoma, Sarcoidosis

## Figures

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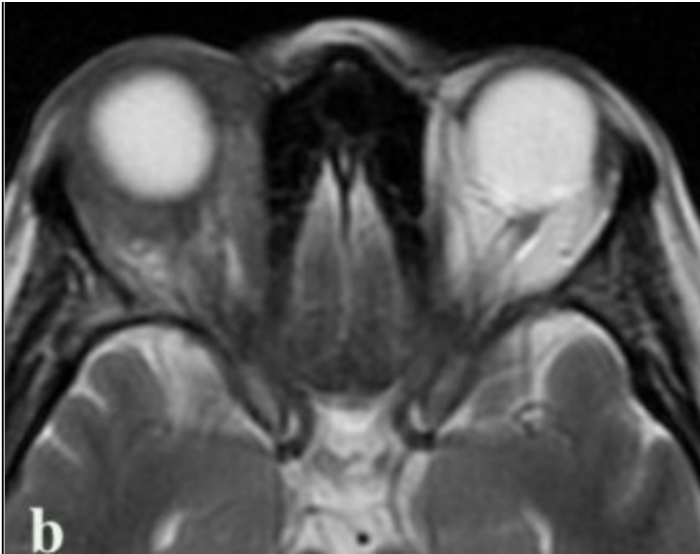
**Figure 1 Axial T1WI (a), T2WI (b), STIR (c, d)**



An intraorbital extraocular infiltrative mass lesion is seen, involving the intra-conal orbital fat, extraocular muscles and periorbital preseptal soft tissue. The mass is hypointense on T1WI.

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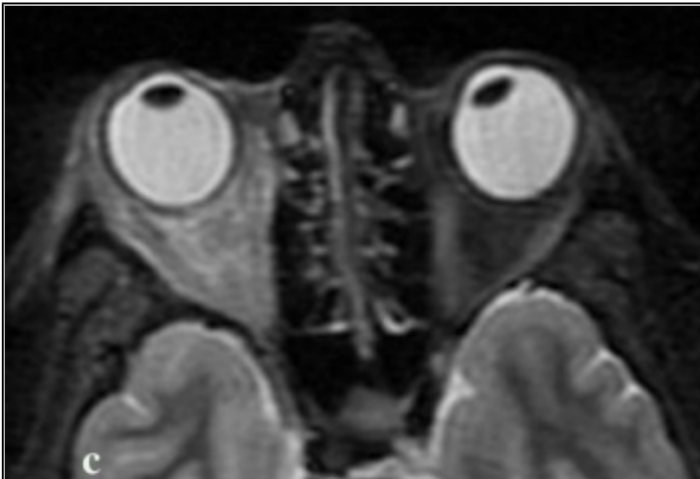
Area of Interest: Neuroradiology brain;  
Imaging Technique: MR;  
Procedure: Diagnostic procedure;  
Special Focus: Neoplasia;



The mass is hypointense on T2WI.

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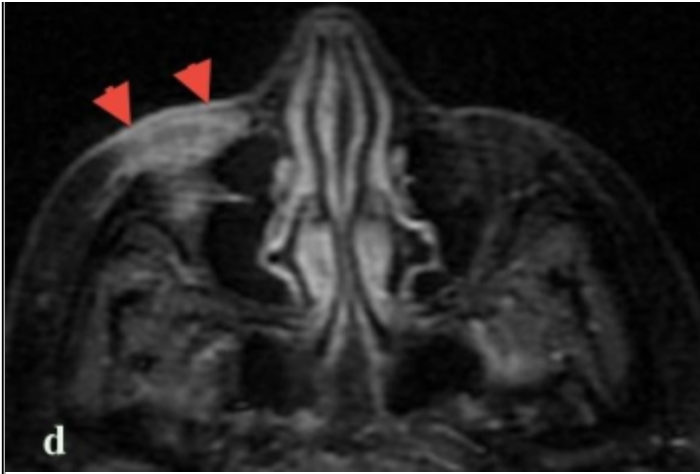
Area of Interest: Neuroradiology brain;  
Imaging Technique: MR;  
Procedure: Diagnostic procedure;  
Special Focus: Neoplasia;



The mass is hyperintense on STIR.

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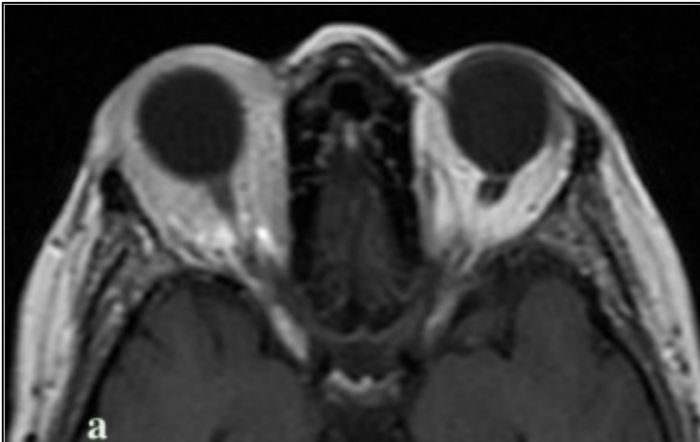


There is an inferior extension into the infraorbital subcutaneous tissue (arrows).

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Area of Interest: Neuroradiology brain;  
Imaging Technique: MR;  
Procedure: Diagnostic procedure;  
Special Focus: Neoplasia;

**Figure 2 Axial, coronal, sagittal post-contrast T1WI**



Axial post-contrast T1WI There is enhancement of the right orbital soft tissues, including the intraconal fat, extraocular muscles, and preseptal periorbital soft tissue.

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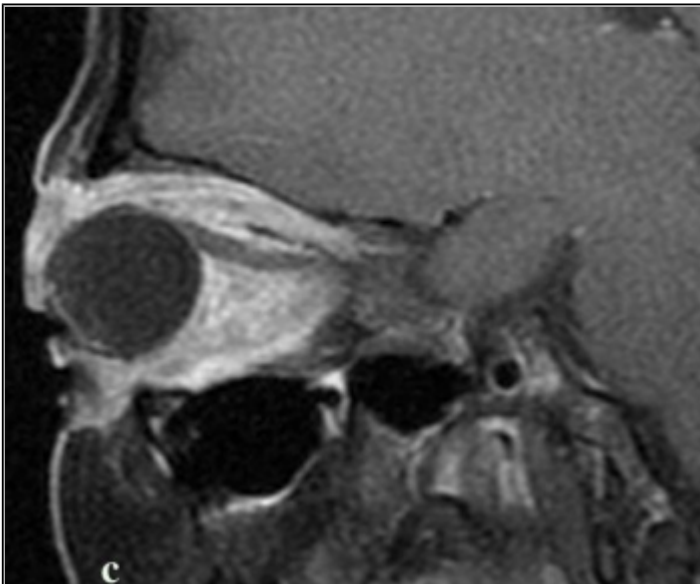
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Imaging Technique: MR;  
Procedure: Diagnostic procedure;  
Special Focus: Neoplasia;



Coronal post-contrast T1WI The mass is encasing the right optic nerve.

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Area of Interest: Neuroradiology brain;  
Imaging Technique: MR;  
Procedure: Defecography;  
Special Focus: Neoplasia;



Sagittal post-contrast T1WI with fat suppression.

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Area of Interest: Neuroradiology brain;  
Imaging Technique: MR;  
Procedure: Diagnostic procedure;  
Special Focus: Neoplasia;

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## Citation

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