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# AN UNUSUAL VISION OF BREAST CANCER: ORBITAL METASTASIS AS A FIRST SYMPTOM"

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## ABSTRACT

Breast cancer is the most frequently diagnosed malignancy in women and currently ranks as the most common cancer worldwide. Survival significantly improves when the diagnosis is made before the onset of metastases, highlighting the importance of early screening.

The development of metastatic disease is closely linked to the tumor's histological type, hormone receptor status, and gene expression profile. Triple-negative breast cancers are associated with a poor prognosis due to their resistance to systemic therapies. In contrast, hormone receptor-positive tumors and those with HER2 overexpression are often associated with longer survival and lower recurrence rates.

The most common sites of metastasis include the lungs, liver, bones, and brain. Orbital is less frequently observed, although breast cancer remains the most common solid tumor associated with these rare location.

We report the case of a patient in whom breast cancer was diagnosed following the onset of unilateral exophthalmos caused by an orbital mass.

## KEYWORDS

Oncology, Breast Cancer , Orbital metastasis.

# MAIN ARTICLE

## Introduction

Breast cancer is the most common malignancy in women and a leading cause of cancer-related morbidity and mortality worldwide. While advances in screening and treatment have significantly improved survival rates, metastatic spread remains a major clinical challenge. Metastases typically involve the bones, lungs, liver, and brain; however, orbital metastases are rare and often underdiagnosed. Despite their rarity, breast cancer is the most frequent primary tumor to metastasize to the orbit, accounting for up to 50% of all orbital metastatic lesions.

Orbital involvement may present with a variety of ophthalmologic symptoms such as diplopia, proptosis, decreased visual acuity, or pain, and can occasionally be the initial manifestation of an undiagnosed primary tumor. Due to its atypical presentation and nonspecific clinical signs, orbital metastasis requires a high index of suspicion and timely diagnostic imaging, followed by histological confirmation.

This article aims to review the clinical, radiological, and histopathological features of orbital metastases from breast cancer, and discusses current therapeutic approaches through the presentation of a representative clinical case.

## Patient and observation :

We report the case of a 54-year-old woman with no significant medical history who presented to the ophthalmologic emergency department with unilateral exophthalmos associated with a marked decrease in visual acuity.

Ophthalmologic examination revealed exophthalmos with periorbital edema and a significant reduction in visual acuity in the left eye, measured at 3/10.

A contrast-enhanced and non-contrast brain and orbital CT scan was performed, revealing a tumoral process infiltrating the entire left orbit and a carcinomatous meningitis.

A brain MRI was performed, allowing for better characterization of the tumor and assessment of its extension.

An etiological workup was initiated to identify a primary tumor, including breast ultrasound-mammography and a thoraco-abdomino-pelvic CT scan.

The breast imaging revealed a suspicious mass located in the upper inner quadrant (UIQ) of the right breast, classified as BIRADS 5 according to the ACR.The thoraco-abdomino-pelvic CT scan (**Figure 4)** revealed the presence of highly suspicious pulmonary nodules.

A breast biopsy was therefore performed, confirming the malignancy of the right UIQ mass, which was histologically identified as an invasive ductal carcinoma.

A diagnosis of metastatic breast carcinoma with secondary involvement of the orbit, meninges, and lungs was established. The patient was managed with palliative care.

**Discussion :**

Orbital metastases represent a small proportion—approximately 1% to 13%—of all orbital tumors (6,7). Among primary tumors responsible for orbital metastases, breast carcinoma is the most frequently implicated, accounting for 28% to 58% of cases, followed by lung cancer, prostate cancer, gastrointestinal malignancies, renal carcinoma, and melanoma (6). Breast cancer is usually diagnosed prior to the onset of orbital symptoms, with the average interval between the initial cancer diagnosis and orbital involvement ranging from 4.5 to 6.5 years. However, in some cases, orbital metastases can occur up to 20 years after the primary diagnosis. Interestingly, in approximately 25% of cases (1/2/3), orbital metastasis may be the initial manifestation of a previously undiagnosed primary cancer.

The incidence of orbital metastases among patients with breast cancer is estimated at 8% to 10%, and the prognosis remains poor, with a mean survival of 22 months following the diagnosis of orbital involvement.

Orbital metastases are most commonly **unilateral,** and their **intraorbital distribution** typically involves the **lateral and superior quadrants**, with a predilection for the **intraconal fat** and the **lateral rectus muscle.** As a result, **diplopia** is frequently observed in these patients.

Other common presenting signs and symptoms include **exophthalmos, pain, ptosis, blurred vision, decreased visual acuity, eyelid swelling**, and occasionally a **visible mass.**

A less common but distinctive sign is **enophthalmos,** which may indicate **infiltration of the orbit by a serous-type breast adenocarcinoma**, and is attributed to fibrotic retraction of the globe (8).

A definitive diagnosis of an orbital tumor requires a biopsy. However, in patients with a known history of metastatic cancer, biopsy may be avoided when there is strong clinical and radiologic suspicion of orbital metastasis. It should be reserved for patients without a known primary malignancy or for those in whom the orbit is the only site of suspected metastasis, and in whom a definitive diagnosis would significantly alter the overall management plan.

On non-contrast CT scans, orbital metastatic lesions typically appear as irregularly shaped masses that are isodense to muscle, with mild contrast enhancement following injection.

On MRI, metastatic disease usually appears hypointense relative to fat on T1-weighted images (T1WI) and hyperintense relative to fat on T2-weighted images (T2WI). This imaging pattern can help differentiate metastases from orbital pseudotumors, which are generally isointense to fat on T2WI.

When hyperintense lesions are seen on T1WI, highly vascular metastases (e.g., from thyroid or renal carcinoma) or melanoma metastases should be suspected.

Combined involvement of the orbit and adjacent structures, such as the paranasal sinuses, is rare but may be detected through imaging studies.

The treatment of orbital metastases from breast cancer is primarily palliative and relies on a multidisciplinary approach aimed at symptom control and preservation of visual function. External beam radiotherapy is the cornerstone of local treatment, offering effective symptom relief and tumor size reduction. Systemic therapy is essential and should be tailored to the tumor subtype: hormone therapy for hormone receptor-positive tumors, targeted anti-HER2 agents for HER2-positive cases, and chemotherapy—possibly combined with immunotherapy—for triple-negative tumors.

Surgical intervention is rarely indicated, except for biopsy or decompression in selected cases. Supportive measures, including corticosteroids for optic nerve compression and symptomatic management, also play a key role in improving patients' quality of life.

## Conclusion

Orbital metastases from breast cancer, although rare, represent a major diagnostic and therapeutic challenge. Their management requires a multidisciplinary approach and early diagnosis to improve patients' quality of life. A better understanding of the underlying biological mechanisms could pave the way for more targeted and effective treatments.

## FIGURES:

*Figure 1 : Scanner cérébro-orbitaire en coupe axiale non injectée (A) , coupes axiale (B) et coronale (C) et sagittale injectées : processus lésionnel tissulaire orbitaire gauche au dépend de la graisse intra et extra- conique , spontanément hyperdense , réhaussé après injection de Gadolinium , responsable d'une exophtalmie grade I, englobant le globe oculaire , le nerf optique , les muscles oculomoteurs et infiltrant les parties molles orbitaires . Il s'y associe un rehaussement leptoméningé.*

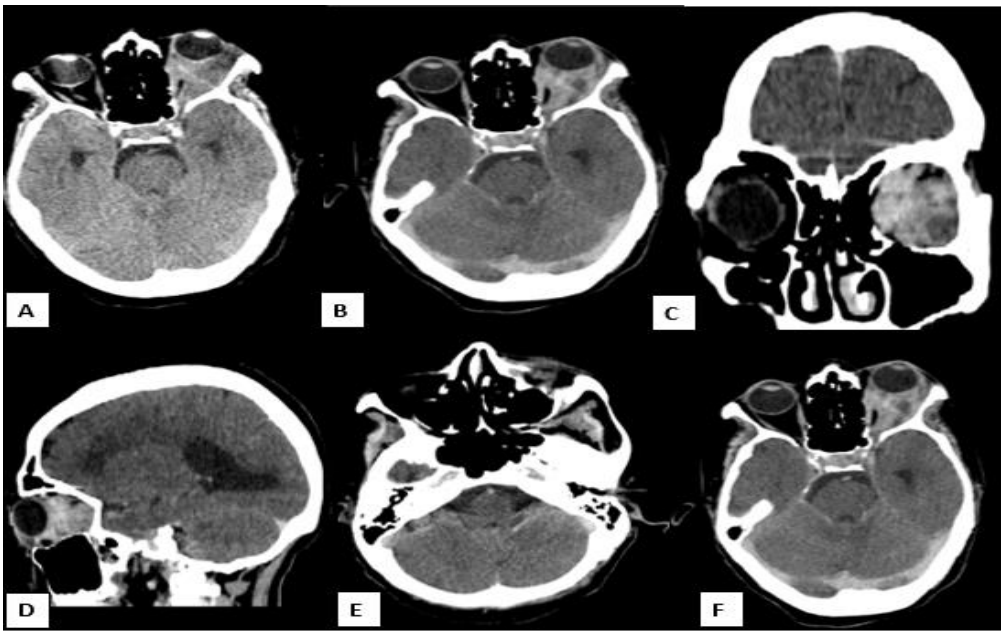



*Figure 2: IRM cérébro-orbitaire permettant une meilleure caractérisation de la tumeur orbitaire et de son extension*

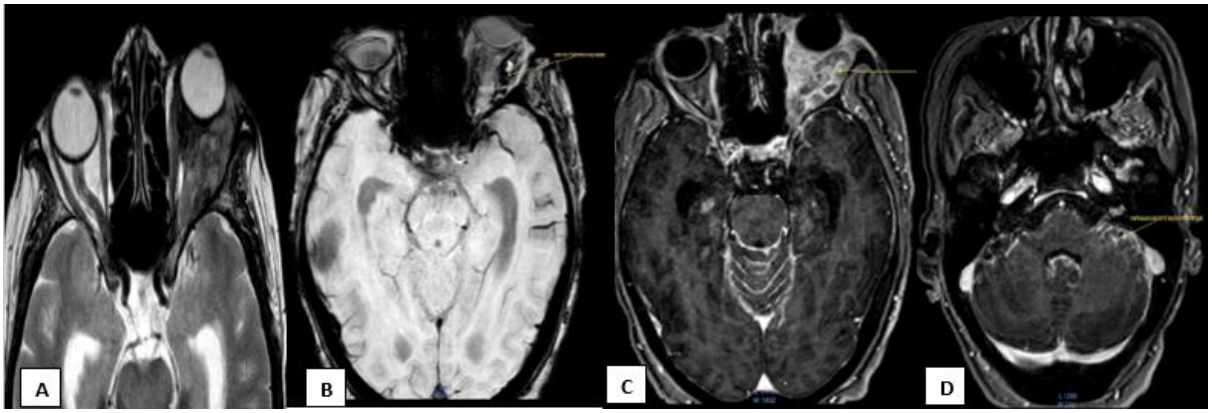
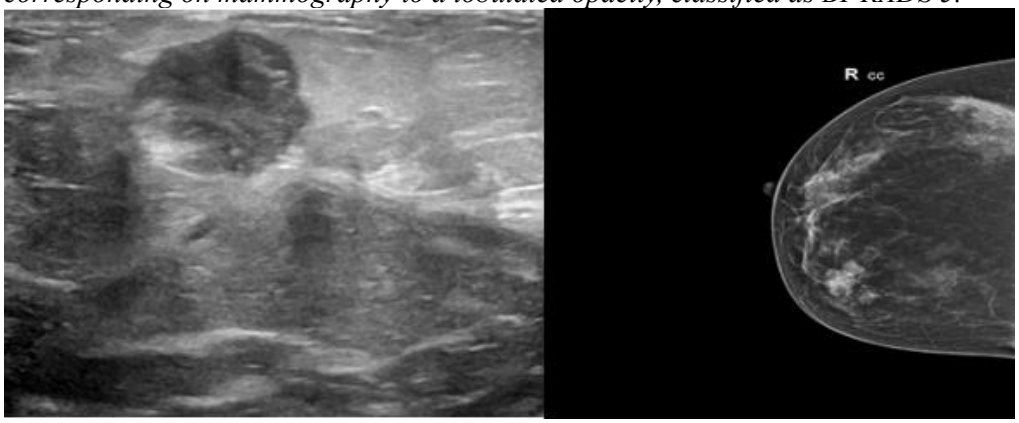


*Figure 3 : Breast ultrasound revealing a well-defined mass in the right upper inner quadrant (UIQ), with lobulated contours, heterogeneous hypoechogenicity, and posterior acoustic attenuation, corresponding on mammography to a lobulated opacity, classified as BI-RADS 5.*

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