

**BREAST CANCER REVEALED BY PARALYSIS OF THE COMMON OCULOMOTOR NERVE : A CASE REPORT AND REVIEW OF THE LITERATURE**

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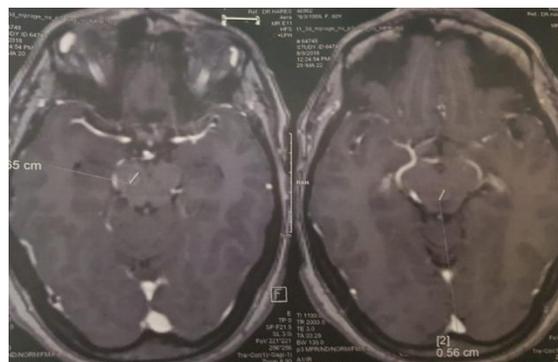
**INTRODUCTION**

The metastatic involvement of the orbit in malignant tumors is a rarely diagnosed condition. Breast cancer accounts for the majority of these cases. Breast cancer can metastasize to many sites, but the orbit is an infrequent location and a comparatively rare site of distribution among the ocular area structures. Longer survival of patients with metastatic disease as well as advances in diagnostic imaging may explain the increasing frequency of ocular involvement<sup>[1]</sup> that occurs in up to one third of breast cancer patients.<sup>[2]</sup> Bone metastases as a sole metastatic site in breast cancer portend a good prognosis as opposed to visceral disease and are seen frequently in the ER/PR (+) Her2/Neu (-) subset of the disease. Nevertheless, they may present a particular clinical problem if they are neighboring sensitive structures such as the spine or the eye, as in this case, and may need urgent treatment to preserve patient's quality of life and function. We report the case of a 50-year-old patient who had orbital metastases of an unknown breast cancer. The commonest clinical sign at diagnosis is exophthalmia. Prognosis is usually pejorative once diagnosis is performed. Standard treatment is radiotherapy and requires a multidisciplinary approach.

**PATIENTS AND METHODS**

A 50-year-old patient was treated in the ophthalmology department for headache and binocular diplopia with, on clinical examination, a picture of total intrinsic and extrinsic paralysis of the left common oculomotor nerve with deficits of elevation, lowering and adduction of the left eye as well as asymmetry of the 2 pupillary diameters. The clinical examination will quickly be directed towards the breasts where a mass of the left breast is found, taking the upper quadrants of 8cm×8cm, mobile in relation to the deep plane, with an inflammatory aspect with orange peel skin, with

retraction of the nipple (fig 4). Presence of fixed homolateral axillary adenopathy of 2cm. The contralateral breast is without particularity. The radiological assessment (mammography and ultrasound) (fig 5) is classified ACR5 on the left, with bifocal lesions 43mm×30mm and 12mm×13mm and suspicious right axillary adenopathy and ACR2 on the right. Cerebral and orbital MRI revealed the presence of mass syndrome with the presence of two lesions at the right cerebral peduncle and at the mesencephalic cap with secondary annular contrast.



**Figure 1: MRI, axial section: presence of two lesions with secondary annular contrast at the right cerebral peduncle and at the mesencephalic cap.**



Figures 2, 3 and 4: Paralysis of the ocular motor nerve.



Figure 4: Nipple retraction with skin fixed tumor of the left breast.

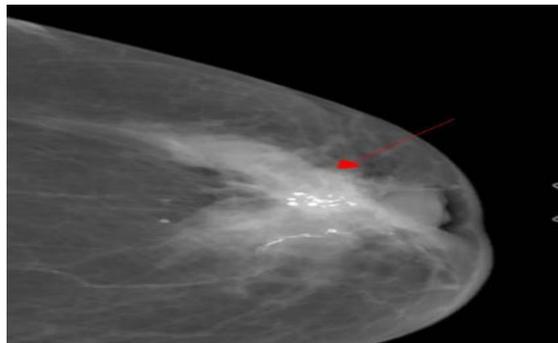


Figure 5: An ACR5 lesion Of the left breast

A surgical biopsy of the mammary lesion which reveals a poorly differentiated infiltrating lobular carcinoma, grade II according to Elston Elis. Immunohistochemistry reveals estrogen receptor positive (75%), progesterone receptor negative, Ki 67-23%, and no overexpression of HER2. The extension workup was completed by abdominal ultrasound, thoraco-abdominopelvic CT scan and bone scan, which did not find any remote lesions. The tumour marker assay is as follows: CA 125 at 12 U/mL, CA 15-3 at 18 U/mL, CA 19-9 at 14 U/mL and ACE at 2.1ng/mL. The patient therefore has poorly differentiated left breast carcinoma with right cerebral peduncle and mesencephalic cap metastasis resulting in paralysis of the ocular motor nerve graded T4-N1-M1. The treatment undertaken after multidisciplinary consultation was neoadjuvant chemotherapy with six well-tolerated FEC 75-type cures combined with symptomatic radiotherapy for retroorbital localization at a dose of 30Gy in ten fractions. The radio-enzymological evaluation after the six courses of chemotherapy shows a residual mammary lesion at the union of the upper quadrants of the left breast measuring 33mm. The disappearance of the paralysis of the ocular motor nerve decreased very markedly with, on MRI, a major regression of the mass syndrome and the mass of right cerebral peduncle and the mesencephalic cap.

## DISCUSSION

Orbital metastases are rare and occur in patients with an average age of 60 years.<sup>[2]</sup> They account for approximately 4% of orbital tumours, but this frequency varies in the literature, estimated at between 2 and 7%.<sup>[3]</sup> Orbital metastases are much less frequent than those affecting the eye and/or optic nerve more generally, the most frequent being metastases of the posterior uvea.<sup>[4]</sup> Most orbital metastases in adults are secondary to adenocarcinomas. Breast cancer metastases are predominant (29-60%).<sup>[1,3,4,5]</sup> It is possible that the actual frequency of orbital metastases of breast cancer is much higher than that reported in the published series. Autopsy histological studies in breast cancer patients found 10-37% of ocular or subclinical orbital metastases.<sup>[6]</sup> However, in a relatively recent study of 300 patients with metastatic breast cancer, only two diagnoses of orbital metastases were made. This suggests that many orbital metastases of breast cancer remain subclinical and are never diagnosed.<sup>[4]</sup> Other origins of orbital metastases are prostate and melanoma (12%), lung (8%) and kidney (7%).<sup>[3]</sup> Other sites have been described but more anecdotally: testicles, gallbladder and bile duct, mammary gland in men, stomach, pleura, thymus and bones but also the bladder, intestinal tract and throat.<sup>[5]</sup> The origin of primary cancer remains unknown in more than a third of cases. For breast cancer, most patients have a known history of cancer at the time of diagnosis of orbital metastases and the majority of patients have non-orbital metastases at the time of diagnosis. In our case, orbital metastasis was the first indication of breast disease, however it was a locally advanced tumor in a patient with no gynecologic follow-up.

Metastases are most often unilateral but bilaterality is higher for metastases of mammary origin (20%) than for other origins (4%). Orbital metastases may involve both the walls of the orbit (bone involvement) and the orbital contents. Most of the time they are located exclusively in the extraconical space (50%), as opposed to 30% in the intraconical space and 20% in both, which is the case for this patient.<sup>[2,7]</sup> For breast cancer, the time interval between diagnosis of the primary cancer itself and diagnosis of orbital metastasis is generally long: the average time interval is six years. Once diagnosed, the prognosis is poor, with an average survival of 31 months and a median of 19 months, with extremes ranging from one to 116 months.<sup>[7]</sup> The most frequent clinical sign at the time of diagnosis is rapid onset exophthalmos, often of discrete amplitude (66% of cases), most often unilateral and irreducible. Ptosis associated with diplopia are signs of muscle involvement. Ophthalmoplegia, decreased visual acuity (in relation to extension at the apex), orbital pain in an inflammatory context (consequence of bone damage), chemosis, paresthesia (trigeminal damage) and pulsatility, papilledema, palpable mass, displacement of the eyeball are other signs of call.<sup>[2]</sup> The anatomopathological characteristics of metastases are the same as those of the primary tumour and are not specific to the orbital location. The lobular histology of breast cancer is proportionally more frequent in these patients, probably due to the expression of adhesion molecules of the integrin family.<sup>[8]</sup> Increased CA 15-3 levels may accompany the occurrence of orbital metastasis. The CT scan is the best examination to study orbital wall lesions or the relationship of an intraorbital lesion to the walls. MRI is less efficient in the study of the walls, but thanks to the possibility of oblique sagittal slices of the optic nerve, it allows a fine study of the nerve and its relationship to the tumour. It is the fundamental examination in tumours straddling the orbit and cranial cavity. The radiological characteristics of orbital metastases on CT scan or MRI may be shared by other inflammatory lesions, benign tumours or orbital lymphoproliferative infiltrates, making radiological diagnosis difficult. However, evidence of bone lysis or hyperostosis associated with a solid, poorly defined infiltrate or an irregular increase in size of one or more extraocular muscles is very suggestive of a met.

## CONCLUSION

Given the increasing incidence of breast cancer and treatments to prolong the survival of these patients, the rate of ocular and orbital metastases is expected to increase. Therefore, patients with ocular symptoms should be considered for this diagnosis.

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