NEURO-OPHTHALMOLOGY
2021, VOL. 45, NO. 3, 181–183
https://doi.org/10.1080/01658107.2019.1704030

Taylor & Francis
Taylor & Francis Group

CASE REPORTS

Check for updates

Orbital Metastasis Secondary to Breast Cancer: A Rare Cause of Unilateral External Ophthalmoplegia

Omer Karti[a], Ozlem Ozdemir[b], Dilek Top Karti[c], Mehmet Ozgur Zengin[d], Sertac Tatli[d], Tuncay Kusbeci[d], and Nese Celebisoy[e]

[a]Department of Ophthalmology, İzmir Democracy University, Izmir, Turkey; [b]Department of Medical Oncology, Bozyaka Training and Research Hospital, Izmir, Turkey; [c]Department of Neurology, Bozyaka Training and Research Hospital, Izmir, Turkey; [d]Department of Ophthalmology, Bozyaka Training and Research Hospital, Izmir, Turkey; [e]Department of Neurology, Ege University Medical Faculty, Izmir, Turkey

ABSTRACT

Orbital metastases are rare causes of orbital tumours, and may present with pain, photophobia, red eye, vision loss, diplopia, proptosis, or external ophthalmoplegia. Breast cancer is responsible for a great majority of orbital metastases. Herein, we report a 78-year-old female who had unilateral external ophthalmoplegia due to orbital metastasis of primary breast cancer.

ARTICLE HISTORY
Received 10 November 2019
Accepted 9 December 2019

KEYWORDS
Breast cancer; external ophthalmoplegia; orbital metastasis

Introduction

Orbital metastases account for a small proportion of orbital tumours. The incidence is reported between 1% and 13%.[1–3] Breast is the most common primary site ranging from 28.5% to 58.8%. Other common sites are lung, prostate, gastrointestinal system, kidney, and skin, respectively.[4–8] Vision loss and/or diplopia, red eye, pain, photophobia, external ophthalmoplegia, proptosis and/or ptosis are common presentations of orbital metastasis.[4,9–11] Herein we report a patient with diplopia due to external ophthalmoplegia caused by orbital metastasis of breast cancer.

Case report

A 78-year-old female was admitted to our clinic because of double vision appearing a month before. The symptom onset was reported to be sudden with gradual progression. She had been diagnosed with right breast cancer roughly a year ago. On initial admission, multiple bone and adrenal metastases were detected. The pathological examination of breast Tru-cut biopsy was invasive lobular carcinoma and immunohistochemical staining was positive for cytokeratin 7, and oestrogen receptor, but negative for progesterone receptor, CerbB2 and e-cadherin. CA 15–3 level, a tumour marker test for breast cancer, was high. She was diagnosed with metastatic breast cancer. On neuro-ophthalmological examination the pupils were isocoric without a relative afferent pupillary defect. Colour vision in both eyes was 15/15 of the Ishihara plates. Mild ptosis of the right eye was associated with marked restriction of elevation and adduction. Left eye movements were free in nine gaze positions (Figure 1). Hertel exophthalmometry values were normal with 14 mm in the right eye and 15 mm in the left eye in the 110 mm base range. Best-corrected visual acuity with a Snellen chart was 0.5 in the right and 0.6 in the left eye. On slit-lamp examination, there were corticonuclear cataracts in both eyes that explained the visual impairment. Intraocular pressure with Goldmann applanation tonometer was within normal limits in both eyes. Although the dilated fundus examination was slightly blurred due to cataract, it was normal in both eyes (Figure 2). Optical coherence tomography parameters of the optic nerve head were normal bilaterally. The remainder of the neurological examination was unremarkable. Axial T1-weighted

CONTACT Omer Karti kartiomer@gmail.com Department of Ophthalmology, İzmir Democracy University, Mehmet Ali Akman Mahallesi, 13. Sokak No:2 Güzelyalı, Izmir, Turkey

© 2019 Taylor & Francis Group, LLC



Figure 1. Nine diagnostic gaze positions exhibiting 3-mm ptosis of the right upper lid and markedly restriction of the right eye elevation and adduction.

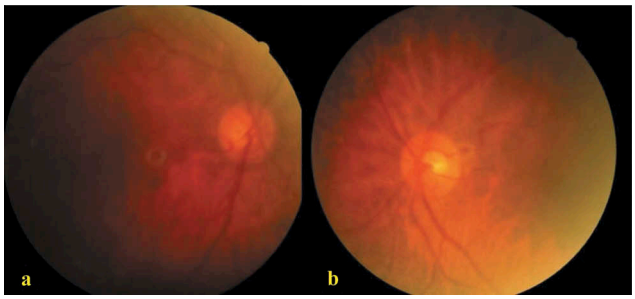


Figure 2. Colour fundus picture showing normal appearance, but blurred due to corticonuclear cataract in both eyes (a, b).

magnetic resonance imaging (MRI) of the orbits revealed a soft tissue mass within the intraconal space between the medial rectus and optic nerve, extending to the superior right orbit. The borders between the defined lesion and optic nerve and medial rectus were indistinguishable (Figure 3). Medial rectus muscle involvement detected on MRI was the explanation for the adduction deficit whereas compression or infiltration of the superior branch of the oculomotor nerve was accepted as the cause of the ptosis and elevation paresis of the right eye. She did not volunteer to undergo fine-needle aspiration biopsy for definitive diagnosis, but it was felt the the most likely diagnosis was orbital metastasis with the history of metastatic breast cancer. The patient was referred to medical oncology and radiation oncology for external radiotherapy planning.

Discussion

Orbital metastases usually present with unilateral involvement and are usually observed in patients with advanced cancer with widespread metastases.

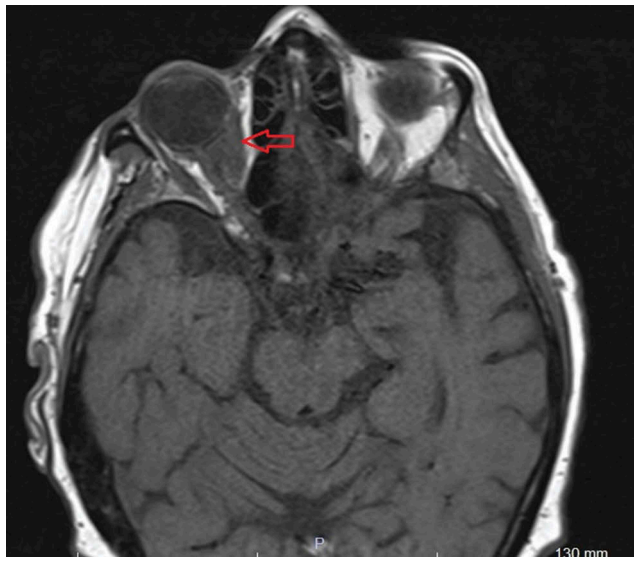


Figure 3. Axial T1-weighted magnetic resonance scan of the orbits demonstrates a focal intraconal mass in the right eye between the medial rectus and optic nerve (red arrow) with indistinguishable borders.

The lateral and superior anatomical quadrants of the orbits are most commonly affected.[1,4,12] The time interval between the diagnosis of the primary cancer and orbital metastasis may be quite long and vary from 4.5 to 6.5 years for breast cancer.[12] Furthermore, an orbital metastasis may be the first presentation of malignancy in almost one-third of cases.[10] Although MRI and computed tomography are useful tools for the diagnosis, a definitive diagnosis is made by fine-needle aspiration biopsy of the lesion with potential risks of bleeding, vision loss, diplopia, dissemination of tumour cells, and globe injury. Therefore, the pros and cons should be considered before undergoing the biopsy.[4,13–16] The diagnosis can also be made radiologically or

clinically in a patient with widespread metastases and/or a history of cancer.[4]

The treatment of orbital metastasis is mostly palliative. Although surgery, systemic chemotherapy and hormonal therapy can be given, the mainstay treatment option is external radiotherapy to control tumour growth, preserve vision and improve the quality of life.[3] Surgery is not recommended as the first choice due to severe ocular morbidity. However, even if the metastatic lesion cannot be completely removed, its application in appropriate cases can improve the patient's quality of life, and may relieve pain, diplopia and proptosis.[2,10,17,18] However, despite all these treatment options, prognosis is quite poor. The mean survival in orbital metastases secondary to breast cancer has been reported as 31 months.[4,14]

Conclusion

External ophthalmoplegia, proptosis and/or ptosis may be associated with orbital metastasis and patients usually present with vision loss and/or diplopia depending on the localisation of the mass. In the presence of these symptoms and signs, orbital metastasis should be considered in the differential diagnosis, especially in cases with a previous diagnosis of primary cancer.

Declaration of interest statement

All authors contributed significantly to the creation of this manuscript and each fulfilled criterion as established by the ICMJE. No potential conflict of interest was reported by the authors. The patient consented in writing to the publication of the case.

ORCID

Tuncay Kusbeci http://orcid.org/0000-0002-5169-4140

References

1. Vlachostergios PJ, Voutsadakis IA, Papandreou CN. Orbital metastasis of breast carcinoma. *Breast Cancer (Auckl)*. 2009;3:91–97.
2. Goldberg RA, Rootman J. Clinical characteristics of metastatic orbital tumors. *Ophthalmology*. 1990;97(5):620–624. doi:10.1016/S0161-6420(90)32534-4.
3. Eckardt AM, Rana M, Essig H, Gellrich NC. Orbital metastases as first sign of metastatic spread in breast cancer: case report and review of the literature. *Head Neck Oncol*. 2011;3:37. doi:10.1186/1758-3284-3-37.
4. Ahmad SM, Esmaeli B. Metastatic tumors of the orbit and ocular adnexa. *Curr Opin Ophthalmol*. 2007;18(5):405–413. doi:10.1097/ICU.0b013e3282c5077c.
5. Wickremasinghe S, Dansingani KK, Tranos P, Liyanage S, Jones A, Davey C. Ocular presentations of breast cancer. *Acta Ophthalmol Scand*. 2007;85(2):133–142. doi:10.1111/j.1600-0420.2006.00737.x.
6. Fahmy P, Heegaard S, Jensen OA, Prause JU. Metastases in the ophthalmic region in Denmark 1969–98. A histopathological study. *Acta Ophthalmol Scand*. 2003;81(1):47–50. doi:10.1034/j.1600-0420.2003.00018.x.
7. Holland D, Maune F, Kovács G, Behrendt S. Metastatic tumors of the orbit: a retrospective study. *Orbit*. 2003;22(1):15–24. doi:10.1076/orbi.22.1.15.14007.
8. Shields JA, Shields CL, Brotman HK, Carvalho C, Perez N, Eagle RC Jr. Cancer metastatic to the orbit: the 2000 Robert M. Curtis Lecture. *Ophthal Plast Reconstr Surg*. 2001;17(5):346–354. doi:10.1097/00002341-200109000-00009.
9. Ng E, Ilsen PF. Orbital metastases. *Optometry*. 2010;81(12):647–657. doi:10.1016/j.optm.2010.07.026.
10. Char DH, Miller T, Kroll S. Orbital metastases: diagnosis and course. *Br J Ophthalmol*. 1997;81(5):386–390. doi:10.1136/bjo.81.5.386.
11. Alameddine RM, Ko AC, Mimura M, et al. Orbital fat regeneration following hormonal treatment of metastatic breast carcinoma. *Orbit*. 2018;37(3):187–190. doi:10.1080/01676830.2017.1383468.
12. Yabaş Kızıloğlu Ö, Paksoy Türköz F, Totuk Gedar ÖM, Mestanoğlu M, Yapıcıer Ö. Breast carcinoma metastasis to the medial rectus muscle: case report. *Turk J Ophthalmol*. 2019;49(3):168–170. doi:10.4274/tjo.
13. Milman T, Pliner L, Langer PD. Breast carcinoma metastatic to the orbit: an unusually late presentation. *Ophthalmic Plast Reconstr Surg*. 2008;24(6):480–482. doi:10.1097/IOP.0b013e31818b6adc.
14.. Goldberg RA, Rootman J, Cline R. Tumors metastatic to the orbit: a changing picture. *Surv Ophthal*. 1990;35(1):1–24.doi:10.1016/0039-6257(90)90045-W.
15. Liu D. Complications of fine needle aspiration biopsy of the orbit. *Ophthalmology*. 1985;92(12):1768–1771. doi:10.1016/S0161-6420(85)34106-4.
16. Arora R, Rewari R, Betharia SM. Fine needle aspiration cytology of orbital and adnexal masses. *Acta Cytol*. 1992;36:483–491.
17. Kennerdell JS, Dekker A, Johnson SL, Dubois PJ. Fine needle aspiration: its use in orbital tumors. *Arch Ophthalmol*. 1979;97(7):1315–1317. doi:10.1001/archopht.1979.01020020057013.
18. Garrity JA, Henderson JW, Cameron JD. *Metastatic Carcinomas. In: Henderson's Orbital Tumors*. 4th ed ed. New York: Raven Press; 2007:313–326.