International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Choroidal Metastasis in Carcinoma Breast: A Case Series

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Abstract: ***Choroidal metastases is the most common ocular malignancy with most common primary tumor located in the breast (47%). Early diagnosis and prompt intervention is required for sight preservation and maintenance of quality of life. Treatment options include local as well as systemic therapy and the choice depends upon the general status of the patient, number of lesions, location and laterality. Systemic therapy includes chemotherapy, hormonal therapy and biological agents whereas local therapy includes external beam radiotherapy, brachytherapy and stereotactic radiotherapy. The response to systemic and localized therapy is generally good, with lesion regression in 94% of cases and preservation of vision in 75% of cases.***

Keywords: choroidal metastasis, ocular malignancies, chemotherapy, hormone therapy, stereotactic radiotherapy.

1. Introduction

Uveal metastases are the most common ocular malignancies that affect the adult population [1, 2].The primary malignancy is usually located in the breast (47%) followed by lung (21%), and the choroid is the most common site of uveal metastases [3].This specific location is attributed to the rich vascularization of the choroidal tissue which creates a microenvironment for the development of tumor cells. The most frequent symptoms are blurring of vision, floaters, photopsia and less frequently, pain.Recent technologic improvements in ophthalmology such as optical coherence tomography (OCT) and ultrasound scan (US) allow an early diagnosis of choroidal metastases. The treatment depends on the extent of metastatic disease and may include chemotherapy (QT), hormonal therapy (HT), immune therapy (IT), intravitreal antiangiogenic treatment, photodynamic therapy, whole eye external radiotherapy or plaque radiotherapy and more recently gamma knife stereotactic surgery [4,5,]. However, there is currently no consensus on the treatment strategy. The response to systemic and localized therapy is generally good, with lesion regression in 94% of cases and preservation of vision in 75% [4].As per the literature, the survival of carcinoma breast patients with choroidal metastasis is 65% at 1 year and 24% at 5 years after diagnosis [6].

2. Case Series

Case 1

A 67 years old female patient known case of metastatic ca breast presented in OPD with complaints of blurring of vision since 2 months. Patient had history of modified radical mastectomy , radiation to chest wall and adjuvant chemotherapy based on Adriamycin cyclofosfamide and docetaxel, 3 years back for stage IIB, hormone receptor positive intraductal carcinoma. Patient subsequently developed recurrent tumor lesion in right breast with bilateral pulmonary metastasis and positive axillary and mediastinal lymphadenopathy for which she received 6 cycles of palliative chemotherapy based on nanopaclitaxel and carboplatin. There was partial response to palliative chemotherapy and patient was continued on hormonal therapy for the last 1 year. Ophthalmology opinion was taken and fundus examination revealed metastatic lesions in bilateral eyes with shifting exudation and retinal detatchment with multiple choroidal metastasis. Patient was started on injection fulvestrant in view of borderline general condition along with hormonal therapy with anastrazole. After 2 months patient reported to OPD with improvement in visual symptoms and ophthalmology review was advised but the patient defaulted thereafter and was lost to follow up.

Case 2

A 39-year-old woman, with a history of triple negative breast cancer previously treated with a mastectomy of her left breast for stage IIB intraductal carcinoma and radiation to chest wall and adjuvant chemotherapy based on taxane, adriamycin and cyclofosfamide, presented with a recent sudden loss of vision in her right eye. At presentation, corrected distance visual acuity was 20/63 in the right eye and 20/20 in the left eye. Fundus examination revealed a whitish area in the inferior-temporal retina in the right eye, whereas the left eye was normal. Moreover, the patient underwent extensive further diagnostic investigations. Ultrasonography was used for measuring dimensions and thickness of the mass, revealing a 2 choroid lesions with a size of 3 mm and 4 mm, located in the inferior-temporal sector and extending to the ora serrata. Further metastatic work up revealed bilateral pulmonary, multiple vertebral and brain metastasis. Due to the concomitant choroidal and brain metastasis, the patient underwent whole brain radiotherapy including right eye with a total dose of 30 Gy in 10 fractions for 2 weeks.1 month after radiation, the ultrasound showed a reduction in choroidal mass and a decrease of the subretinal fluid and improvement in visual symptoms. Patient was started on palliative chemotherapy based on cisplatin and nabpaclitaxel. However, due to high metastatic burden of disease, the patient succumbed to death 6 months later.

Case 3

A case of a 59-year-old woman with a 4 year history of left breast adenocarcinoma, HER-2 positive, was treated with mastectomy, radiation, chemotherapy and immunotherapy for 1 year (4 cycles of doxorubicin and cyclophosphamide followed by 12 cycles of paclitaxel and trastuzumab). She did well on routine follow- up, until she developed metastatic disease with pulmonary and bony metastasis in routine screening and was started on palliative chemotherapy based on paclitaxel and cisplatin. After 6 months she presented to the ophthalmology department with blurring of vision in the right eye for 5 days. Her best corrected visual acuity was 6/10 in the right eye and 10/10 in the left eye. Fundoscopy revealed a yellowish elevated subretinal lesion near the inferior temporal arcade. Optical coherence tomography disclosed a hyporeflective choroidal lesion with undulating surface and compression of the choriocapillaris, associated with subretinal fluid and serous detachment of the fovea. Based on clinical features and multimodal imaging, a presumed diagnosis of choroidal metastase (CM) was made. The patient was started treatment with palbociclib. After the first cycle, the patient reported visual improvement and after 3 months of treatment, best corrected visual acuity had recovered to 10/10. Fundoscopy demonstrated near complete resolution of the choroidal lesion. The patient´s systemic disease also responded to the treatment regimen well with a reduction in the number and size of the lung metastases.

3. Discussion

The recent improvements in oncology and ophthalmologyhave significantly changed the management and outcome of patients with choroidal metastasis. A combination of systemic and local therapy is preferred in severe visual acuity. The choice between localized and/or systemic therapy depends on the general status of the patient, number of lesions, location and laterality [2].

Local therapy includes external beam radiation therapy, brachytherapy, photodynamic therapy and more recently stereotactic radiotherapy. EBRT is most commonly prescribed in the dose of 40-60 Gy requiring 2–4 weeks of multiple radiation fractions, but, is associated with risk of radiation toxicities like cataracts, exposure keratopathy, iris neovascularization, radiation retinopathy, and optical neuritis in almost 12% of cases [7]. Stereotactic radiotherapy offers advantages like treatment of multiple metastatic lesions simultaneously using a minimum dosage of radiations, reducing significantly the time of treatment and reducing the ocular complications. There are few evidences of literature reporting complete regression of choroidal metastasis by single session of stereotactic radiotherapy (Lally et al., Schmelter et al.) [4] [8]. However, multiple sessions of stereotactic radiotherapy are common in practice to avoid radiation induced side effects.

Systemic therapy targets primary tumor and metastatic lesions by chemotherapy, hormonal therapy, immunotherapy and biological therapy. These treatments can lead to complete regression of the ocular lesions, in 1-4 months [9] with added benefit of avoidance of radiation induced toxicities particularly keratopathy, cataract, retinopathy and optic neuropathy . Demirci et al. reported a local tumor control rate of 81% using systemic chemotherapy or hormone therapy in affected patients [10]. Correlation of ER/PR/HER2 receptor status of patients with choroidal metastatic involvement by breast cancer could potentially influence the treatment of these patients.

Early diagnosis and appropriate timely treatment are therefore mandatory to maintain patient's quality of life.The treatment is multidisciplinary and aims at the control of the primary tumor and metastases, with the fewest possible side effects. However, recurrences do occur, as well as metastases in the fellow eye. Thus, ophthalmologic examination should be continued periodically in an already diagnosed case of metastatic breast cancer.

4. Conclusion

Uveal metastases are the most common ocular malignancies that affect the adult population. A combination of systemic therapy (chemotherapy, immunotherapy, hormonal therapy) along with local therapy in the form of external beam radiotherapy or stereotactic radiotherapy can regress the lesions completely and help in eye sight preservation and improvement in patient's quality of life.

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