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Case Report

Choroidal Metastasis from Occult Lung Adenocarcinoma Presenting as Exudative Retinal Detachment in A Case of Iga Vasculitis

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Abstract

Choroidal metastasis is the most common intraocular metastatic manifestation of systemic malignancy and may present with serous or exudative retinal detachment. We report a 59-year-old man who presented with 1 week of reduced vision in the left eye associated with a left temporal hemifield defect. He had a history of IgA vasculitis treated with mycophenolate mofetil and hypertension. Best-corrected visual acuity was 6/6 in the right eye and 6/12 in the left eye. Fundus examination of the left eye showed an exudative retinal detachment with yellowish choroidal masses involving the optic disc. Fluorescein angiography demonstrated early hypofluorescence with multiple pinpoint leaks, and B-scan ultrasonography showed a choroidal mass with medium internal reflectivity and no acoustic hollowing.

Systemic evaluation identified a right upper-lobe lung mass with extensive metastatic disease. Endobronchial ultrasound-guided transbronchial needle aspiration of a subcarinal node showed non-small-cell carcinoma with an immunoprofile favoring adenocarcinoma. The patient received image-guided radiotherapy to the whole brain and left posterior segment and systemic therapy with Osimertinib followed by pemetrexed and carboplatin. Subsequent imaging demonstrated regression of the choroidal lesion and marked resolution of the exudative retinal detachment, accompanied by systemic metabolic response on PET. This case highlights the importance of prompt systemic evaluation in patients presenting with an amelanotic choroidal mass and exudative retinal detachment.

Keywords: Choroidal metastasis; Exudative retinal detachment; Lung adenocarcinoma; Non-small-cell lung carcinoma; Radiotherapy and Osimertinib

Introduction

Choroidal metastasis is the most common intraocular metastatic tumor in adults, reflecting the rich vascular supply of the choroid. Breast and lung carcinomas are the most frequent primary malignancies associated with choroidal metastasis, with lung cancer being particularly important in men. Clinically, choroidal metastases often appear as yellow-white or amelanotic, relatively flat or dome-shaped lesions and may be accompanied by subretinal fluid or exudative retinal detachment. Ultrasonography typically demonstrates medium-to-high internal reflectivity, which can help distinguish metastases from the low-to-medium reflectivity commonly associated with choroidal melanoma [1-3].

The management of choroidal metastasis is individualized according to the primary malignancy, extent of systemic disease, number and location of ocular lesions, visual potential, and expected response to systemic treatment. Options include systemic therapy,

external-beam radiotherapy, plaque radiotherapy, photodynamic therapy, and observation in selected patients [2,3]. With the increasing availability of targeted systemic therapies, regression of choroidal metastases and associated subretinal fluid may occur without additional local ocular intervention in appropriately selected patients [4,5]. We describe a patient in whom an exudative retinal detachment associated with choroidal metastasis was the presenting ocular manifestation of metastatic lung adenocarcinoma and subsequently regressed following combined ocular radiotherapy and systemic antineoplastic therapy.

Case Report

A 59-year-old man presented with diminution of vision in the left eye for 1 week, associated with a left temporal hemifield defect. His medical history was notable for IgA vasculitis treated with mycophenolate mofetil and hypertension. There was no history of diabetes mellitus. At presentation, best-corrected visual acuity was 6/6 in the right eye and 6/12 in the left eye. Anterior segment examination was unremarkable in both eyes. The right fundus was normal. Examination of the left fundus revealed an exudative retinal detachment associated with multiple yellowish choroidal masses involving the optic disc (Figure 1). Fluorescein angiography of the left eye demonstrated early hypofluorescence over the involved area with multiple pinpoint leaks. B-scan ultrasonography demonstrated a choroidal mass with medium internal reflectivity and no acoustic hollowing, findings that favored a metastatic lesion over a typical choroidal melanoma. Optical coherence tomography demonstrated choroidal elevation with associated subretinal fluid (Figure 2).

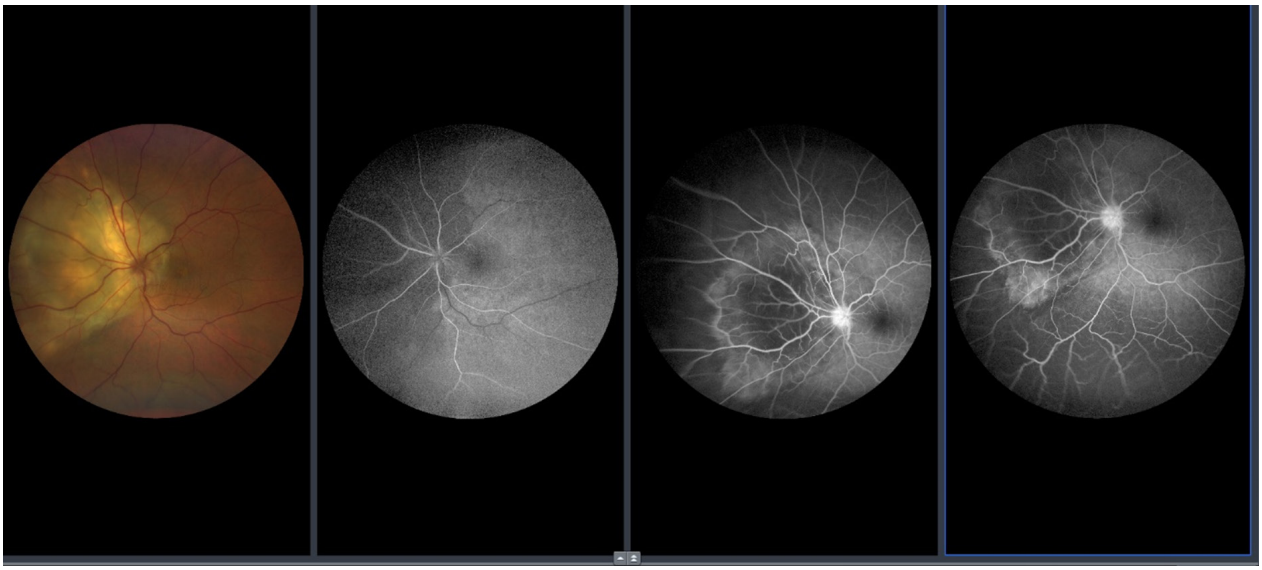


Figure 1: Baseline left-eye imaging. Color fundus photograph demonstrates a yellowish choroidal mass involving the posterior pole and optic disc with associated exudative retinal detachment. Fluorescein angiography shows early hypofluorescence over the lesion with multiple pinpoint leaks.

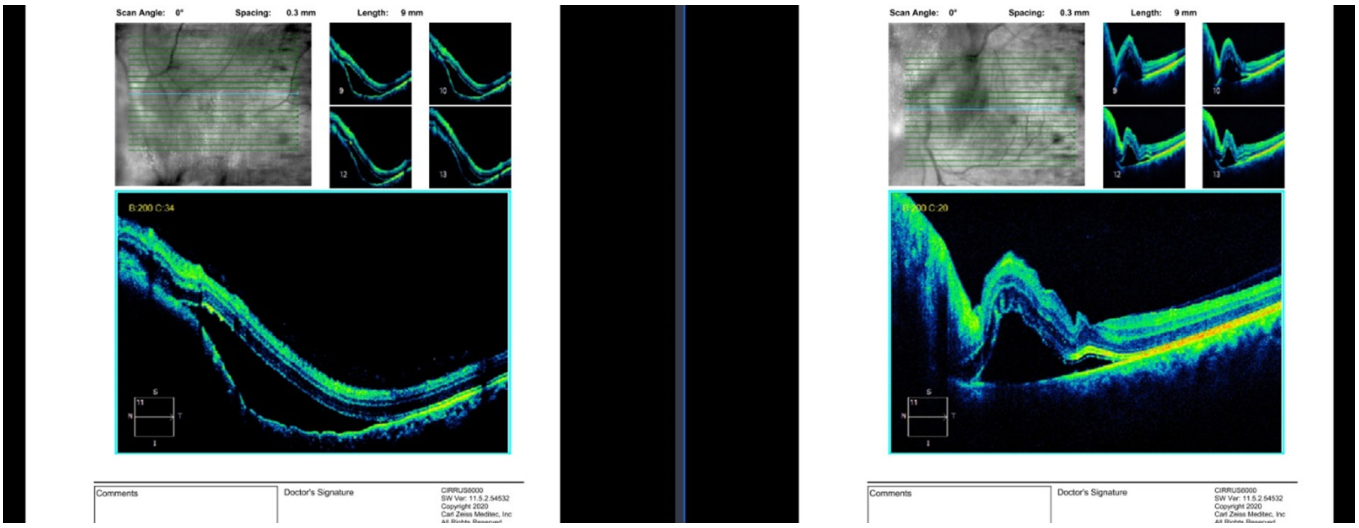


Figure 2: Baseline optical coherence tomography of the left eye demonstrating choroidal elevation with associated subretinal fluid.

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Because of the appearance of the choroidal lesions and the possibility of an underlying systemic malignancy, systemic imaging was performed. PET/CT demonstrated an FDG-avid mass in the apical segment of the right upper lobe, extensive cervical and mediastinal lymphadenopathy, and multiple skeletal metastatic deposits. Additional metabolically active lesions were identified in the left posterior ocular region, left adrenal gland, left piriformis muscle, and other sites, with multiple bilateral brain lesions described as non-FDG-avid (Figure 3). The imaging impression was metastatic primary lung malignancy, staged as T2a N3 M1c, stage IVB according to the report provided in the source material.

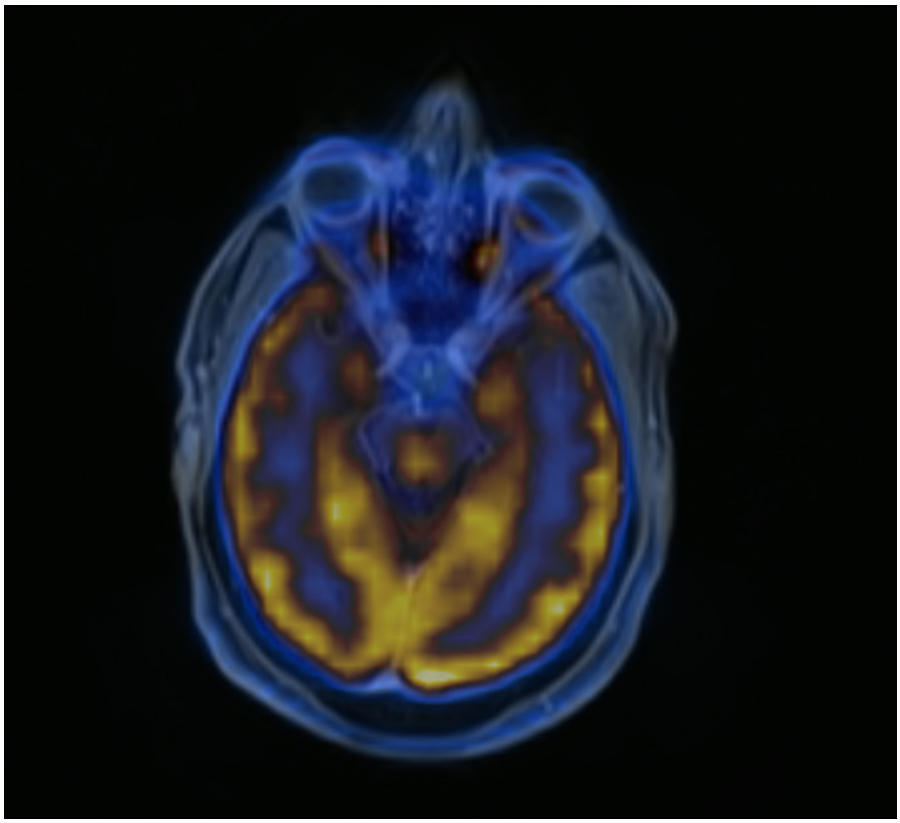


Figure 3A

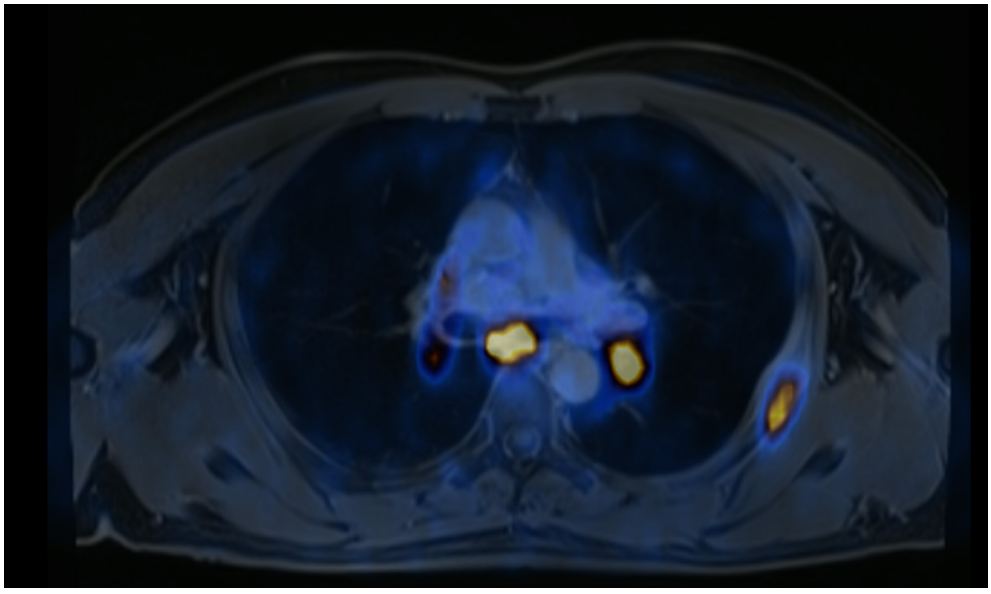


Figure 3B

Figure 3: Systemic imaging. Baseline PET/CT demonstrates an FDG-avid right upper-lobe lung mass with extensive nodal, skeletal, adrenal, muscular, and other metastatic deposits. Follow-up PET/CT after systemic therapy demonstrates substantial reduction in metabolic activity and size of the primary and metastatic lesions, with no new FDG-avid distant metastases reported.

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Endobronchial ultrasound-guided transbronchial needle aspiration of a subcarinal lymph node was performed. Cytology demonstrated atypical malignant cells arranged in tight clusters and singly scattered, with a high nucleocytoplasmic ratio and hyperchromatic nuclei. Immunohistochemistry showed positivity for thyroid transcription factor-1 (TTF-1) and negativity for p40, supporting non-small-cell carcinoma with an immunophenotype favoring adenocarcinoma. PD-L1 (SP263) staining was negative. The final clinical diagnosis was left eye exudative retinal detachment secondary to choroidal metastasis from metastatic lung adenocarcinoma.

The patient underwent image-guided radiotherapy consisting of whole-brain radiotherapy and irradiation of the left posterior segment, with a total dose of 3000cGy delivered in 10 fractions over 13 days. Systemic treatment was initiated with Osimertinib 80mg once daily for approximately 3 months, followed by pemetrexed plus carboplatin. After the fourth cycle of chemotherapy, repeat PET imaging demonstrated a substantial systemic response, including reduction in the size and metabolic activity of the right upper-lobe primary lesion, regression of cervical and mediastinal nodal disease, resolution of metabolic activity in the left adrenal lesion, reduction in skeletal metastatic activity, and resolution of previously described metabolic activity in the left piriformis muscle and other sites. No new FDG-avid lymph-node or distant metastases were reported (Figure 3). after treatment demonstrated marked regression of the yellowish choroidal lesions (Figure 4).

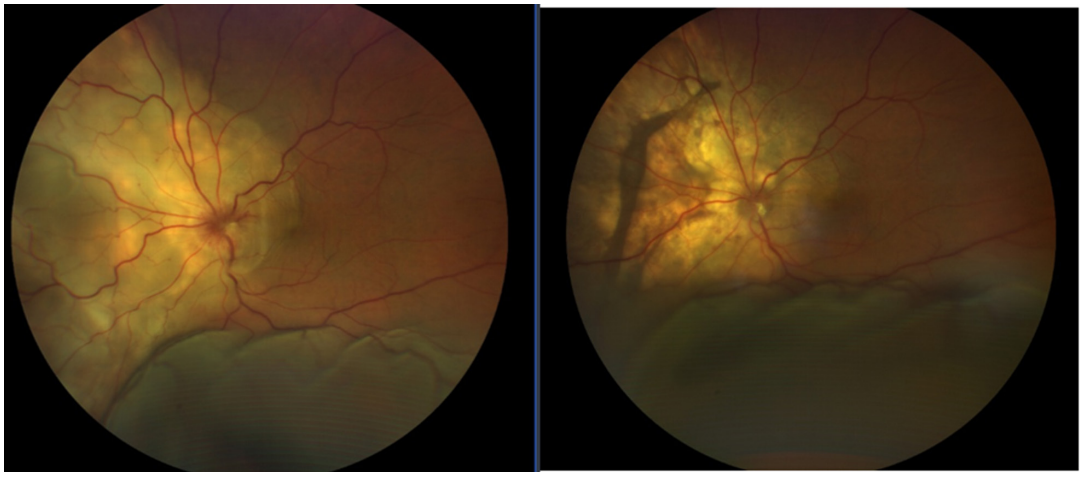


Figure 4: Post-treatment ocular appearance. Serial color fundus photographs demonstrate regression of the yellowish choroidal lesions and marked improvement of the exudative retinal detachment following radiotherapy and systemic therapy.

Discussion

This case illustrates an important ocular presentation of metastatic lung adenocarcinoma. The combination of a yellow-white choroidal mass, associated exudative retinal detachment, and medium internal reflectivity with no acoustic hollowing on B-scan is characteristic of choroidal metastasis. In contrast, choroidal melanomas more commonly demonstrate low-to-medium internal reflectivity and may show acoustic hollowing [2,3]. The early hypofluorescence with multiple pinpoint leaks on fluorescein angiography in this patient is also compatible with the altered choroidal circulation and overlying retinal pigment epithelial dysfunction associated with metastatic disease.

Lung carcinoma is a particularly important cause of choroidal metastasis in men. In a systematic review of reported cases of choroidal metastasis presenting with lung cancer, adenocarcinoma was the most common histologic subtype, and regression of choroidal metastases was observed in many patients treated without primary enucleation. Our case is consistent with this pattern and additionally demonstrates the dramatic improvement that may occur in the associated exudative retinal detachment when the underlying systemic malignancy responds to treatment.

External-beam radiotherapy has historically been an effective local treatment for symptomatic choroidal metastases, particularly when lesions are juxtapapillary, multifocal, or associated with significant subretinal fluid [2,6]. In this patient, the lesion involved the optic disc and was associated with extensive exudative retinal detachment, making local posterior-segment irradiation a reasonable component of treatment. Importantly, the patient also had widespread systemic disease, so systemic therapy was essential rather than treating the ocular lesion in isolation.

Targeted therapies have changed the management of metastatic lung cancer and can produce meaningful ocular responses. Osimertinib, a third-generation EGFR tyrosine kinase inhibitor, has been reported to produce regression of choroidal metastases and associated subretinal fluid in patients with EGFR-mutated non-small-cell lung cancer [4,5]. In the present case, Osimertinib was administered, although the molecular mutation status is not documented in the supplied clinical material. Therefore, a direct causal attribution of the ocular response to Osimertinib alone cannot be made. The improvement occurred in the setting of combined local radiotherapy and systemic therapy, and the subsequent PET response supports an overall systemic treatment response.

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A notable feature of the case is the close parallel between systemic and ocular regression. The initial PET/CT demonstrated extensive metastatic disease, while the follow-up PET showed substantial metabolic resolution or reduction at multiple sites. Similarly, serial fundus photographs documented regression of the choroidal lesions and exudative retinal detachment. This emphasizes the value of multimodal imaging and systemic disease assessment when evaluating suspected choroidal metastasis. The case also reinforces that exudative retinal detachment secondary to a choroidal mass should prompt consideration of metastatic disease, particularly when the lesion is yellow-white and ultrasonographically medium-reflective.

Conclusion

Choroidal metastasis may present with exudative retinal detachment and can be the first manifestation of disseminated lung adenocarcinoma. Detailed fundus examination, fluorescein angiography, OCT, and B-scan ultrasonography can support the diagnosis, while systemic imaging and tissue diagnosis are essential for identifying the primary malignancy. In patients with widespread disease, coordinated systemic treatment with appropriately selected ocular radiotherapy may result in marked regression of both the metastatic lesion and associated exudative retinal detachment.

Ethical approval

The case was managed in accordance with the principles of the Declaration of Helsinki. Informed written consent was obtained

Conflicts of interest

Nil

Financial support

Nil

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