

Bilateral choroidal mass as an initial manifestation of lung cancer

Massa coroidal bilateral como manifestação inicial de câncer de pulmão

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ABSTRACT

Choroidal metastasis is the most common intraocular malignancy. However, bilateral involvement remains exceptionally rare. We describe a case of a 57-year-old patient with no comorbidity who presented with progressive decrease in visual acuity of both eyes for 5 months duration. Fundus examination of both eyes revealed choroidal masses in the posterior pole with serous retinal detachment. She did not exhibit any respiratory symptoms, and systemic examinations were normal. Systemic investigation including computed tomography thorax revealed patient had lung tumour with HPE of the biopsy of regional lymph node confirming it to be adenocarcinoma. The patient received 12 cycles of chemotherapy and oral tyrosine kinase inhibitor. At 4 weeks, visual acuity improved and fundus showed shrinkage of choroidal mass. Even though bilateral choroidal metastasis is rare, any choroidal lesion should be taken as secondary spread until and unless proven otherwise.

RESUMO

A metástase coroidal é a malignidade intraocular mais comum. No entanto, o envolvimento bilateral permanece excepcionalmente raro. Descrevemos o caso de uma paciente de 57 anos, sem comorbidade, que apresentou diminuição progressiva da acuidade visual de ambos os olhos durante 5 meses. O exame de fundo de olho de ambos os olhos revelou massas coroides no polo posterior com descolamento seroso de retina. Ela não apresentava sintomas respiratórios, e os exames sistêmicos eram normais. A investigação sistêmica, incluindo tomografia computadorizada de tórax, revelou que o paciente apresentava tumor pulmonar com HPE da biópsia do linfonodo regional, confirmando ser adenocarcinoma. A paciente recebeu 12 ciclos de quimioterapia e inibidor de tirosina quinase oral. Às 4 semanas, a acuidade visual melhorou, e o fundo mostrou encolhimento da massa coroidal. Embora a metástase coroidal bilateral seja rara, qualquer lesão coroidal deve ser considerada como disseminação secundária até ser considerada o contrário.

INTRODUCTION

Choroidal metastasis is the most common intraocular malignancy owing to its vast blood supply and optimal environment for tumour seedings.⁽¹⁾ Primary cancers that most commonly lead to choroidal metastases are breast cancer and lung cancer.⁽²⁾ The incidence of ocular metastasis from lung cancer is reported to be 2 to 7% according to the international literature.⁽³⁾ Normally, lung cancer presents as unilateral and unifocal metastasis.⁽⁴⁾ In this case, however, we would like to report bilateral choroidal mass secondary to lung cancer as the first presentation.

The study has been submitted to National Medical Research Register of Malaysia with the Research ID RSCH - ID-24-04709-9SE.

CLINICAL CASE

A previously well 57-year old Malay woman with no comorbid, non-smoker, presented with gradual, generalized and painless blurring of vision of both eyes for 5 months. There was no eye redness. There were no floaters, photophobia and flashes of light. No other constitutional symptoms noted. Patient did not have family history of malignancy or blood dyscrasia.

Her visual acuity was 6/18 on the right eye and 1/60 on the left eye. Relative afferent pupillary defect (RAPD)

was negative. Anterior segment examination of both eyes was unremarkable. Fundus examination (Figure 1A) of the right eye showed 6-disc diameter choroidal mass temporal to fovea with mixture of hyper and hypopigmentation overlying it. No drusens and obvious orange pigments were seen. No vasculitis or vitritis. Left eye fundus examination (Figure 1B) showed a 10-disc diameter choroidal mass extending from supero-temporal arcades towards infero-temporal arcade, encroaching the temporal juxta-foveal region. No drusens and obvious orange pigments were seen. No vasculitis or vitritis. The intraocular pressure was normal in both eyes. Full systemic examination was done. Breast examination was normal. Lung and abdominal examinations were normal. No obvious lymphadenopathy palpable at presentation.

B-scan ultrasonography of the both eyes showed a choroidal mass with high reflectivity anterior border and mixed hypo- and hyperechoic interior but no orbital shadowing (Figure 2). Optical coherence tomography (OCT) macula was performed and both eyes showed hyporeflective choroidal mass with surrounding subretinal fluid and serous pigment epithelial detachment (Figures 3A and 3B).

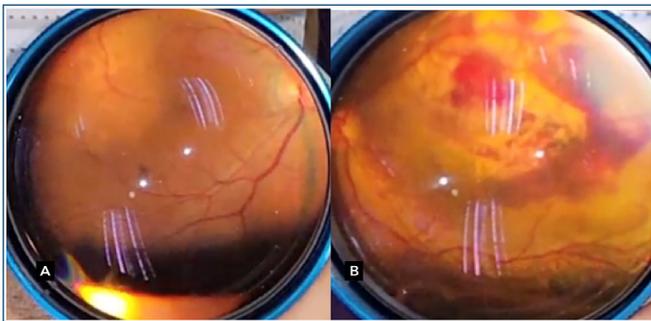


Figure 1. (A) Colour fundus photo of right eye demonstrates large choroidal mass supero-temporal to fovea. (B) Colour fundus photo of left eye demonstrates large choroidal mass and retinal hemorrhages over the macula.

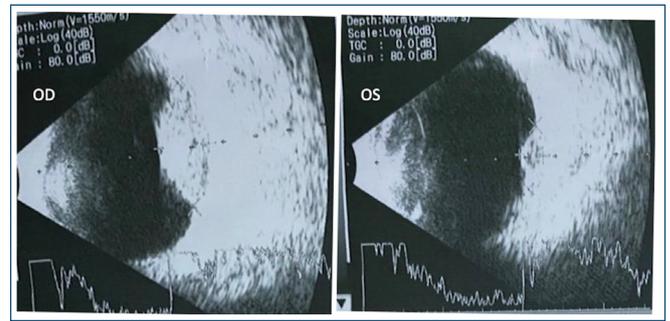


Figure 2. B-scan ultrasonography of both eyes showed mixed hypoechoic and hyperechoic choroidal mass with high surface reflectivity.

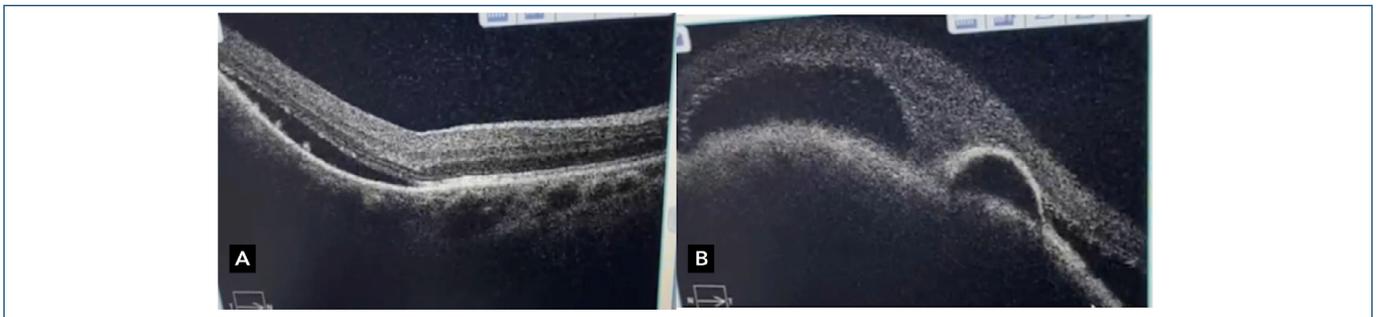


Figure 3. (A) Optical coherence tomography macula of the right eye showed hypo-reflective choroidal mass with subretinal fluid. (B) Optical coherence tomography macula of the left eye showed hypo-reflective choroidal mass with subretinal fluid and pigment epithelial detachment.

Blood investigations, which include tumour markers such as carcinogenic embryonic antigen (CEA), alpha fetoprotein and Ca-125, were normal. Infective screening, which includes Venereal Disease Research Laboratory test (VDRL), toxoplasma serology-cytomegalovirus serology and herpes serology (TORCHES), erythrocyte sedimentation rate (ESR), and Mantoux test, were performed and results were normal. Computer tomography (CT) scan of thorax showed left lung mass with metastatic lymphadenopathy. Computer tomography scan of abdomen and brain showed liver lesions, vertebral involvement and enhancing brain lesion at left frontal lobe. Patient was referred and co-managed with oncology team for the lung mass, which was likely the primary malignancy. Subsequently, biopsy of regional lymph nodes was done, and HPE suggested adenocarcinoma.

She was started on Gefitinib, a tyrosine kinase inhibitor and systemic chemotherapy for a total 12 cycles for treatment of lung adenocarcinoma. Her subsequent follow-up 4 weeks after treatment initiation showed an improvement of vision to 6/15 in her right eye and 6/36 on her left eye. Anterior segment examination was unremarkable. Intraocular pressure was normal. Fundus examination of her both eyes showed shrinkage of the choroidal mass with more well-defined margin. The patient was asked to continue her oncology follow-up with 2 monthly ophthalmology follow-ups. Unfortunately, patient defaulted her ophthalmology follow-up and we were unable to review her at 6 months after chemotherapy.

DISCUSSION

We reported a case of a lung adenocarcinoma with bilateral choroidal metastasis as the first presenting sign. To date, the most common malignancy of the eye is intraocular metastasis.^(1,2) The extensive vascular uveal tract is the most common part of the eye involved in metastasis. The choroid (88%) is the most commonly affected site followed by the iris (9%) and ciliary body (2%).^(3,4) In female patients, choroidal metastasis could originate from the breast, lung or gastrointestinal cancer. In 34% of cases,

choroidal metastasis precedes the diagnosis of systemic cancer. In a study by Kreusel et al., of all patients reported to have choroidal metastasis as the presenting symptom, 58% had lung cancer and 28% had breast cancer.⁽⁵⁾

Choroidal metastasis shows no preference for either the right or left eye. Only 20% of cases presented as bilateral choroidal mass as the majority usually affects only one eye.⁽⁶⁾ In a review of 520 eyes, Shields et al. reported that metastases from lung cancer are usually unilateral.⁽⁷⁾ Table 1 summarizes the published reports over the past 10 years on bilateral choroidal metastasis from lung carcinoma.⁽⁸⁻¹⁰⁾ All the patients in the reports presented with multifocal choroidal lesions distributed over all four quadrants of retina rather than unifocal solitary choroidal mass at the macula. However, in our case, patient had bilateral choroidal metastasis with single choroidal lesion encroaching the macula instead of the more common unilateral and multifocal involvement.

Patients with choroidal metastasis usually exhibit one or more of the following symptoms: gradual reduction in vision, flashes, floaters, altered visual field and ocular pain.⁽¹¹⁾ In 7% of patients, there were no symptoms. Most common symptom being reduction of vision which almost always associated flashes of light.⁽¹²⁾ Visual acuity ranges from 6/12 to 6/60 with majority in the better acuity end. In our patient, she only had reduction in vision which was progressive over 5 months duration due to exudative retinal detachment near the macula. In this case, the diagnosis of lung cancer was difficult as patient didn't have respiratory symptoms. The diagnosis of choroidal metastasis was subsequently supported by imaging, which includes B-scan ultrasonography, OCT macula, CT scan of the thorax and HPE of punctate aspiration biopsy of regional lymph nodes. The diagnosis of choroidal metastasis signifies the end stage of the disease and confirms the dissemination of malignant cells away from primary tumour, as illustrated in our case.

Treatment of intraocular metastases depends on the clinical status of the patient. It is usually palliative because presence of such metastasis confirms the hematogenous

Table 1. Summary of published case reports of bilateral choroidal metastasis secondary to lung carcinoma

Authors	Age; gender	Presenting symptoms	Presenting visual acuity	Final visual acuity	Characteristic	Treatment
Namad et al. ⁽⁸⁾	59; female	Photopsia	Not available	Not available	Multifocal subretinal and choroidal lesions	Radiotherapy
Phutalath et al. ⁽⁹⁾	46; male	Photopsia	6/18 both eyes	6/9 both eyes	Multifocal subretinal and choroidal lesions	Systemic chemotherapy
Aragao et al. ⁽¹⁰⁾	71; female	Blurring of vision	6/12 both eyes	Not available	Multifocal subretinal and choroidal lesions	No treatment-palliative
She et al. ⁽¹⁴⁾	22; male	Blurring of vision	Light perception	Light perception	Multifocal subretinal and choroidal lesions with retrolental mass	Systemic chemotherapy

spread of the disease. In line with this, the treatment mainly stems around improving quality of life and preserve vision.⁽¹³⁾ Therefore, chemotherapy alone can be used in patients with chemo-responsive primary tumours. It can be combined with oral tyrosine kinase inhibitor (erlotinib) for choroidal metastases. Local treatment can be initiated if patient has ocular symptoms. Intravitreal therapy of vascular endothelial growth factor (VEGF) inhibitor can be effective especially if it is combined with systemic therapy.⁽¹⁴⁾ Patients treated with intravitreal bevacizumab and systemic chemotherapy achieved subretinal masses shrinkage and improvement of visual acuity during the 4-month treatment period. Our patient was only treated with 12 cycles of systemic chemotherapy and tyrosine kinase inhibitor as patient does not want any intraocular intervention. Despite that, patient was able to achieve visual improvement as the choroidal mass reduce in size. However, despite improvement of symptoms, patient defaulted subsequent follow-up and we were unable to evaluate her at 6 months after completion of chemotherapy regime.

Nevertheless, despite aggressive treatment, the prognosis is usually poor with 54% mortality at mean 12-month follow-up.⁽¹⁵⁾ This is due to the initial chemosensitive tumours becoming drug resistant during the treatment course in most cases. Thus, a high index of suspicion is required when any choroidal masses are encountered, which can be a masquerade to systemic malignancy. It is important for the ophthalmology team to be aware of this, and a comprehensive systemic evaluation should be obtained.

AUTHOR'S CONTRIBUTION

Chin Shi Tang: case report drafting and finalization; Abirami Shavani and Rohana Taharin: supervisors; Ismail Shatriah: main supervisor, idea contributor.

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