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Case report

Choroidal metastasis as the initial presentation of lung adenocarcinoma: A case report

Asma Migaou [a,*], Ahmed Ben Saad [a], Sameh Joobeur [a], Nouha Ben Abdeljelil [b], Sourour Zina [c], Saoussen Cheikh Mhammed [a], Naceur Rouatbi [a], Nesrine Fahem [a]

[a] Pulmonology Department, Fattouma Bourguiba Hospital, Monastir, Tunisia
[b] Department of Pathology, Fattouma Bourguiba Hospital, Monastir, Tunisia
[c] Department of Ophthalmology, Fattouma Bourguiba Hospital, Monastir, Tunisia

A B S T R A C T

Clinical reports of symptomatic choroidal metastasis as the initial presentation of lung cancer are rare. Here, we report such a presentation in a female patient of non small cell lung cancer. She presented with loss of vision in her left eye. On further analyses, the patient was diagnosed with a lung adenocarcinoma.

1. Introduction

Metastatic choroidal tumors are the most common intraocular malignancies [1,2]. The incidence of ocular metastasis from lung cancer is reported to be 2–7% according to the international literature [3,4]. The majority of cases involve end-stage patients [5,6]. The lung represents the first primary site for choroidal metastasis among men and the second among women after the breast [1,2]. Decrease in visual acuity or other ophthalmic manifestations as the initial clinical presentation of lung cancer primarily is infrequent [2]. In the present report, a case of non-small cell lung cancer presenting with choroidal metastasis as an initial manifestation is described.

2. Case presentation

A 48 -year-old female patient presented to the department of ophthalmology with a four-month history of painless loss of vision in her left eye. There was no significant medical history. An ophthalmic examination revealed a best corrected visual acuity of 20/20 in the right eye and a reduced visual acuity to 20/320 in the left one. In both eyes, intraocular pressure was 14 mmHg, the anterior segment was unremarkable, and there was no relative afferent papillary defect. Fundus examination revealed a yellowish white, elevated choroidal mass measuring around 6 disc diameters along the supero-temporal arcade associated with overlying retinal pigment epithelium (RPE) alterations in the right eye and a large subretinal mass involving the posterior pole with exudative retinal detachment in the left eye [Fig. 1]. Fundus fluorescein angiography revealed initial hypofluorescence of lesions that changed over time to heteregenous hyperfluorescence in both eyes [Fig. 2]. The B scan ultrasonography results were unremarkable in the right eye and revealed a choroidal mass with high internal reflectivity, and associated exudative retinal detachment in the left eye. A swept-source optical coherence tomography (SS-OCT) of the macula showed normal findings in the right eye and the presence of subretinal fluid involving the fovea in the left eye. SS-OCT of choroidal lesions revealed a dome-shaped elevation of the neurosensory retina and RPE with adjacent subretinal fluid in the left eye [Fig. 3]. Based on the clinical findings, it was hypothesized that the patient was presenting with choroidal metastasis from an occult primary. A chest-X ray showed an apical opacity in the left lung. Therefore, a Computed Tomography (CT-scan) of the chest, abdomen and brain was performed. It revealed a large mass in the left upper lobe, measuring 66*46 mm in the axial section, multiple scattered solid nodules and micronodules in the other regions of each lung were detected. The lesion was accompanied with mediastinal enlarged lymph nodes [Fig. 4]. A whole body bone scan did not show any bone metastasis.

Thus, the patient was referred to our Department for further evaluation. The patient was a non smoker but she had a high exposure to wood smoke. On repeated enquiry, the patient reported having had some left-sided chest pain over the last four months. There was no history of breathlessness, wheezing, cough or expectoration. On physical examination, the patient had a good performance status with normal body mass index (BMI). The chest examination was normal and no lymph nodes were palpable clinically. The breast examination was normal.

Routine blood investigations were normal. Sputum examination for

* Corresponding author.
E-mail address: migaou.asma@gmail.com (A. Migaou).

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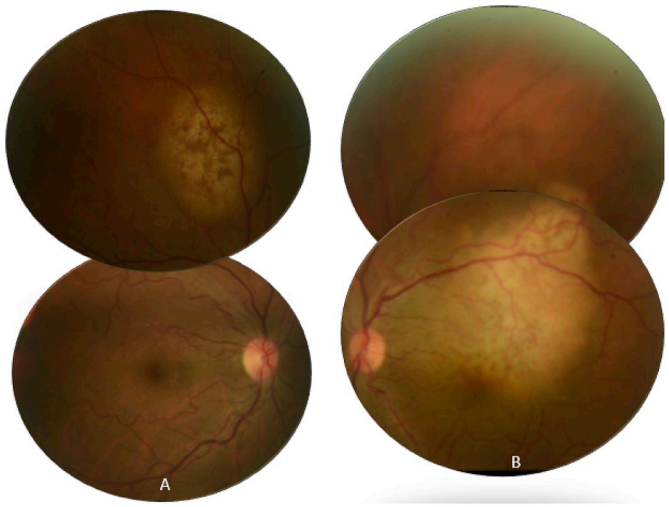

Fig. 1. Fundus photography of the right eye (A) shows yellowish white, elevated choroidal mass along the supero-temporal arcade associated with overlying retinal pigment epithelium (RPE) alterations and a large subretinal mass involving the posterior pole with exudative retinal detachment in the left eye(B).

acid-fast bacilli was negative. There were high levels of tumor markers: ACE and CA15- 3. The patient did not tolerate bronchial fibroscopy. Hence, a Computed Tomography-guided fine needle aspiration biopsy of the pulmonary mass was carried out and it revealed a non-small cell lung carcinoma (NSCLC) that was indicative of an adenocarcinoma. Immunohistochemistry, therefore, confirmed the primitive lung origin of the tumor (immunostain of CK7 and TTF-1 in tumor cells) [Fig. 5]. A final diagnosis of stage IV adenocarcinoma of the lung with lung and choroidal metastases was made.

The patient received four lines of systemic chemotherapy: three cycles of pemetrexed and cisplatin switched by paclitaxel (Three cycles) because of tumor progression and increase in the number and the size of lung nodules. Then she received six cycles of navelbine followed by three cycles of etoposide. Currently, at 30 months follow-up, her chest CT-scan shows disease progression. The ophthalmic examination also did not show any improvement.

3. Discussion

We report herein a case of a lung adenocarcinoma with choroidal metastasis as the first presenting sign. Intraocular metastasis is considered the most common malignancy of the eye [7,8]. The highly vascular uveal tract is the most common part of the eye involved in metastasis. Within the uvea, the choroid (88%) is the most commonly affected site followed by the iris (9%) and ciliary body (2%) [9]. Given its rich vascular supply, the choroid is a common site for the seeding of lung

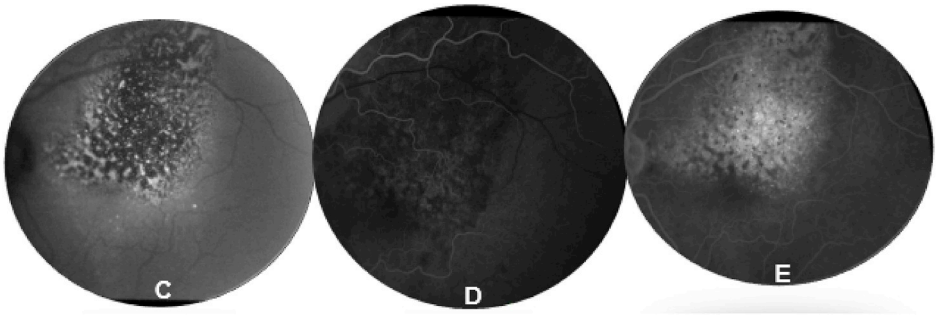

Fig. 2. Fundus autofluorescence of the left eye (C) shows alternance of hypo and hyper autofluorescent lesions. Fundus fluorescein angiography of the same eye reveals initial hypofluorescence of lesions (D) that changed over time to heteregenous hyperfluorescence (E).

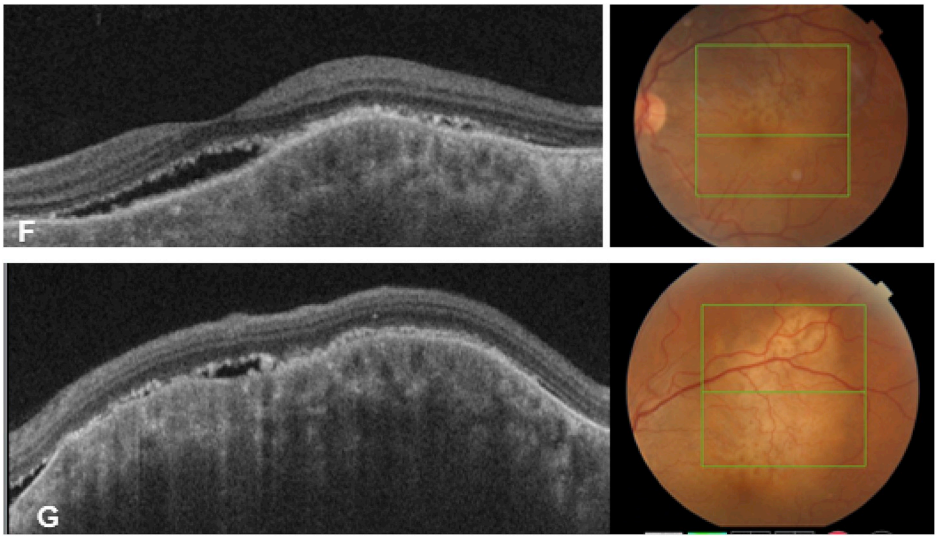

Fig. 3. Macular Swept-source optical coherence tomography (SS-OCT) of the left eye shows the presence of subretinal fluid involving the fovea (F) and SS-OCT of choroidal lesions (G) reveals a dome-shaped elevation of the neurosensory retina and RPE with adjacent subretinal fluid and hyper reflective deposits within the neurosensory detachments.

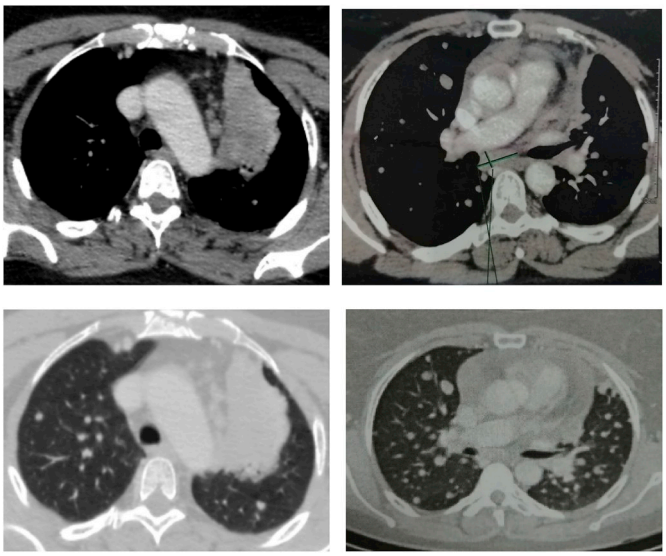

Fig. 4. Chest CT scan in axial section, mediastinal and parenchymal window showing: Left apical parenchymal mass associated with mediastinal enlarged lymph nodes and multiple nodules and scattered solid micronodules. This mass engages the segmental branches of the culmen and comes into contact with segment II of the aorta and the left branch of the pulmonary artery on less than 180° without signs of invasion.

cancer cells [10]. In female patients, choroidal metastasis could have its origin in the breast, lung or gastrointestinal cancer and in a malignant melanoma. In male patients, it originates in lung, gastrointestinal, pancreas, prostate or kidney cancer [1,11]. In Kreusel KH study, of all patients reported to have choroidal metastasis as the presenting symptom, 58% had lung cancer and 28% had breast cancer [12]. Choroidal metastasis show no preference for either the right or left eye [13]. Kreusel et al. [14] studied 84 patients with primary lung cancer where the prevalence of the choroidal metastases was estimated to be 7.1%. However, in a study from Tel Aviv Sourasky Medical Center, Barak et al. [15] screened 77 patients with advanced breast cancer and 92 patients with advanced lung cancer. They noticed an incidence that was lower than that described previously with no cases of choroidal metastases for patients with breast cancer and 2 cases for patients with lung cancer. Shields et al. reported that at the time of ocular diagnosis, 66% of the patients had a history of primary cancer and 34% had no history of cancer. Out of 142 patients with no prior cancer, the primary site was discovered in 49% [2]. In fact, Choroidal metastasis may be the first sign of systemic dissemination of a known lung carcinoma [16] or may be the first sign of a pulmonary malignant tumor initially unknown but identified in a metastatic stage [17].

Indeed, our patient had already choroidal metastasis as initial presentation of a lung adenocarcinoma. The most common symptom of choroidal metastasis is the progressive decrease in visual acuity [1]. There are other ocular signs such as photophobia, diplopia, palpebral ptosis, blepharitis, exophthalmos, retinal detachment and uveitis [1,5]. Our patient presented with a left visual loss due to exudative retinal detachment. The diagnosis of choroidal metastases was primarily based on the clinical findings supplemented by imaging (Ultrasound, fluorescein angiography, orbit CT-scan, optical coherence tomography, nuclear magnetic resonance and puncture-aspiration biopsy). The diagnosis of choroidal metastasis with final stage of lung cancer was established and the dissemination seemed to be almost certain. The biopsy of the choroid lesion is done only when it is isolated, unique and in the absence of primary neoplasia [18]. In the case of such patients, the prognosis is extremely poor and the mean survival is not expected to be more than 6 months [19]. Our patient has survived choroidal metastasis of lung adenocarcinoma for 30 months. The management of intraocular metastases depends on the clinical status of the patient. Treatment is palliative, because the presence of such metastases suggests a hematogenous spread of cancer. In line with this, the treatment aimsto improve quality of life and restore or preserve vision. This may be achieved with enucleation, exenteration, transpupillary thermotherapy, photocoagulation, photodynamic therapy, chemotherapy and orbital irradiation [10,20]. Thus, chemotherapy alone can be used in patients

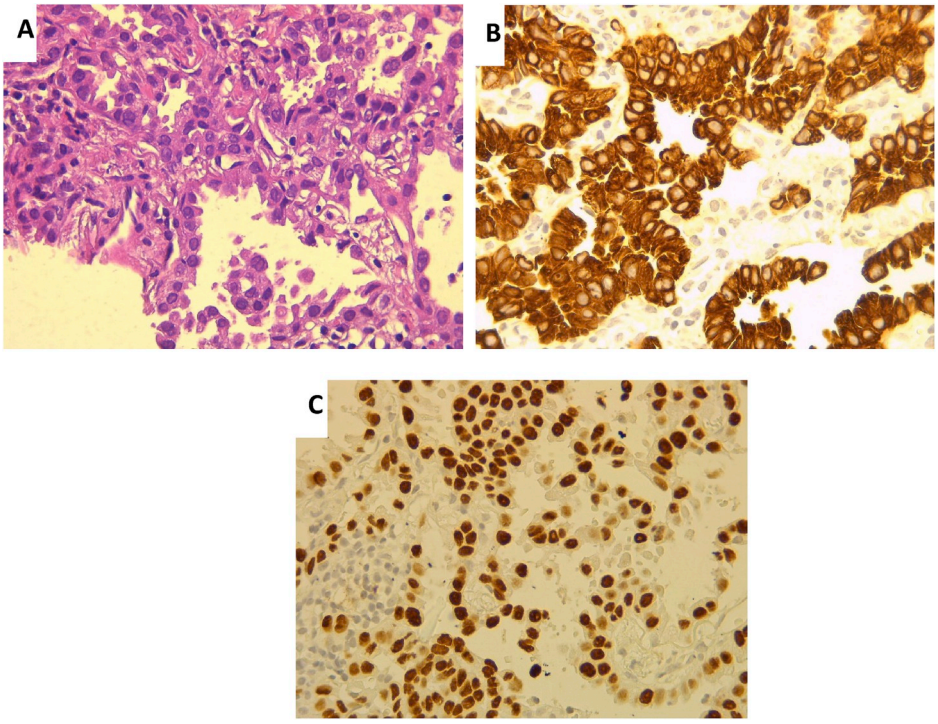

Fig. 5. A: Malignant neoplasm at the alveolar wall, partially respecting the alveolar lumen emitting projections resembling butterfly wings, hematoxylin and eosin staining x100. B: stain of CK7 in tumor cells. C: immunostain of TTF-1 in tumor cells.

with chemo-responsive primary tumors. If the patient is under systemic chemotherapy and the choroidal tumor is asymptomatic, no ocular treatment is indicated. But in our patient, there was no improvement in vision after four lines of systemic chemotherapy. In such refractory cases, radiation therapy has been recommended [21]. Barry et al. [22] described four cases with choroidal metastases from a non-small cell lung cancer and showed that the systemic therapy (with multiple chemotherapy agents) did not seem to be effective. The intravitreal therapy could be an effective therapy to the choroid metastases especially if it is combined with systemic therapy. It was reported that a female patient from South Korea had been treated with intravitreal bevacizumab (a vascular endothelial growth factor (VEGF) inhibitor) and an oral tyosine kinase; erlotinib combination therapy for choroidal metastases secondary to NSCLC. Best corrected visual acuity (BCVA), fluorescein angiography (FA), optical coherence tomography (OCT), and B-scan ultrasonography were compared during the 4-month treatment period. Four weeks after the third injection of bevacizumab (2.5 mg), the BCVA improved to 20/40 from 20/200 and the 2 subretinal masses completely disappeared.

4. Conclusion

Choroid metastasis from lung cancer is rare. The choroidal metastasis itself being the initial presentation is even rarer. It appears that this metastasis tends to occur in the advanced stage of cancer. Choroidal metastases require multidisciplinary care and a systemic search for lung cancer. Histologically adapted chemotherapy must be considered. Although prognosis is poor, increased awareness regarding this rare presentation of lung cancer can help with its prompt recognition and appropriate management. More studies to explore therapeutic options for patients with advanced NSCLC and choroidal metastases are warranted.

Declaration of competing interest

The authors declare no conflict of interest.

References

[1] A.P. Ferry, R.L. Font, Carcinoma metastatic to the eye and orbit. I. A clinicopathologic study of 227 cases, Arch. Ophthalmol. 92 (4) (1974) 276–286.
[2] C.L. Shields, J.A. Shields, N.E. Gross, G.P. Schwartz, S.E. Lally, Survey of 520 eyes with uveal metastases, Ophthalmology 104 (8) (1997) 1265–1276.
[3] S. Shamim, S. Vidya, S. Kabir, B. Ghosh, Choroidal metastases as the initial presentation of lung cancer: a rare scenario, Niger. J. Clin. Pract. 20 (7) (2017) 905–909.
[4] T. Simsek, Y. Ozdamar, N. Berker, Choroidal mass as an initial presentation of lung cancer, Med. Oncol. 25 (4) (2008) 400–402.
[5] R.E. Aragão, I.M. Barreira, L.M. Gomes, A.S. Bastos, Fde F. Beserra, Choroidal metastasis as the first sign of bronchioloalveolar lung cancer: case report, Arq. Bras. Oftalmol. 76 (4) (2013) 250–252.
[6] C. Asteriou, D. Konstantinou, A. Kleontas, D. Paliouras, G. Samanidis, F. Papadopoulou, et al., Blurred vision due to choroidal metastasis as the first manifestation of lung cancer: a case report, World J. Surg. Oncol. 8 (2010) 2.
[7] T. Namad, J. Wang, A. Tilton, N. Abdel Karim, Bilateral choroidal metastasis from non-small cell lung cancer, Case Rep. Oncol. Med. 2014 (2014) 858265.
[8] H.R. Kourie, J. Antoun, A. Schakal, E. Nasr, M. Sahyoun, J. Kattan, Complete disappearance of choroidal metastasis from lung adenocarcinoma treated with bevacizumab and chemotherapy, Case Rep. Ophthalmol. Med. 142408 (2015), 4 pages.
[9] B. George, W.J. Wirostko, T.B. Connor, N.W. Choong, Complete and durable response of choroid metastasis from non-small cell lung cancer with systemic bevacizumab and chemotherapy, J. Thorac. Oncol. 4 (5) (2009) 661–662.
[10] M.D. Turliuc, A. Sava, G.F. Dumitrescu, A. Cucu, A. Eşanu, C. Tudorache, et al., Right visual loss due to choroidal metastasis of a papillary adenocarcinoma of the lung: a case report, Rom. J. Morphol. Embryol. 56 (3) (2015) 1173–1177.
[11] J.A. Shields, C.L. Shields, Intraocular Tumors: an Atlas and Textbook, second ed., *Lippincott Williams & Wilkins*, Philadelphia, PA, 2008, 608 pp.
[12] K.H. Kreusel, N. Bechrakis, T. Wiegel, Clinical characteristics of choroidal metastasis, Der Ophthalmologe 100 (8) (2003) 618–622.
[13] M. Nicolò, F.C. Piccolino, D. Ghiglione, G. Nicolò, G. Calabria, Multiple bilateral choroidal metastatic tumors from a smallcell neuroendocrine carcinoma of unknown primary site, Eur. J. Ophthalmol. 15 (1) (2005) 148–152.
[14] K.M. Kreusel, T. Wiegel, M. Stange, N. Bornfeld, W. Hinkelbein, M.H. Foerster, Choroidal metastasis in disseminated lung cancer: frequency and risk factors, Am. J. Ophthalmol. 134 (3) (2002) 445–447.
[15] A. Barak, M. Neudorfer, G. Heilweil, O. Merimsky, A. Lowenstein, M. Inbar, et al., Decreased prevalence of asymptomatic choroidal metastasis in disseminated breast and lung cancer: argument against screening, Br. J. Ophthalmol. 91 (1) (2007) 74–75.
[16] R.E. Abundo, C.J. Orenic, S.F. Anderson, J.C. Townsend, Choroidal metastases resulting from carcinoma of the lung, J. Am. Optom. Assoc. 68 (2) (1997) 95–108.
[17] M. Lam, J. Lee, S. Teoh, R. Agrawal, Choroidal metastasis as the presenting feature of a non-small cell lung carcinoma with no apparent primary lesion identified by X-ray: a case report, Oncol. Lett. 8 (4) (2014) 1886–1888.
[18] L. Khaldi, A. Bachene, A. Soyeux, M. Bouillot-Goutorbe, Bilateral choroidal metastasis revealing disseminated cancer: a case report, J. Fr. Ophtalmol. 25 (10) (2002) 1043–1047.
[19] T. Bhattacharyya, R. Kapoor, A. Bahl, B.S. Yadav, U. Singh, K. Joshi, et al., Carcinoma lung presenting with choroidal metastasis as initial presentation: a rarity, J. Cancer Res. Ther. 9 (3) (2013) 504–506.
[20] G. Walls, S. Napier, D. Stewart, Visual impairment due to bilateral multifocal choroidal metastasis of parotid adenocarcinoma: a case report, Front. Oncol. 4 (2014) 136.
[21] E.K. Tsina, A.M. Lane, D.N. Zacks, J.E. Munzenrider, J.M. Collier, E.S. Gragoudas, et al., Treatment of metastatic tumors of the choroid with proton beam irradiation, Ophthalmology 112 (2005) 337–343.
[22] A.S. Barry, F. Bacin, L. Kodjikian, F. Benbouzid, T. Balmitgere, J.D. Grange, Choroidal metastases of lung neoplasm treated with external radiotherapy and polychemotherapy: a study of four clinical cases, J. Fr. Ophtalmol. 35 (2) (2012) 122.e1–122.e8.