Rare disease

Unilateral temporal haemianopia in a patient with non-small cell lung cancer: intraocular metastasis despite chemotherapy

Alexander Liu,¹ Harman Saman,¹ Pawan Pusalkar²

¹AAU, Watford General Hospital, Watford, Hertfordshire, UK;

²Department of Diabetes and endocrinology, Watford General Hospital, Watford, UK

Correspondence to Dr Pawan Pusalkar, pawan.pusalkar@whht.nhs.uk

Summary

A 70-year-old lady with non-small-cell lung cancer receiving chemotherapy presented with gradually worsening visual disturbance for 2 weeks. She had no history of seizures or weakness. Physical examination revealed an isolated left sided temporal haemianopia. A brain MRI performed on admission showed a new left intraocular lesion highly suspicious for metastasis. CT scan showed cancer disease progression despite chemotherapy. She was managed palliatively.

BACKGROUND

The majority of ocular malignancies are metastatic in nature, of which the most common primary origins are the breast and the lung.¹ Intraocular metastases can present as the first signs of lung cancer,¹⁻³ alternatively they can present in late stage disease after metastases to other secondary sites are found.⁴ The choroid is the commonest site of intraocular metastases and patients typically present with blurred vision and blindness.⁴ It is important to recognise ocular metastases early to allow suitable intervention, but it is also important to consider the management in the context of the primary cancer.

CASE PRESENTATION

A 70-year-old patient with metastatic non-small-cell lung cancer (NSCLC) was admitted with gradual onset visual field loss for 2 weeks. NSCLC was diagnosed by transthoracic needle biopsy 3 months prior to presentation, which confirmed to be adenocarcinoma. Her initial staging CT scan showed bilateral mediastinal disease with a solitary liver metastatic nodule measuring 1 by 2 cm. Her case had previously been discussed at the cancer multidisciplinary team meeting and a decision was made to treat with six cycles of cisplatin and pemetrexed chemotherapy without biological agents due to lack of funding in this particular

Figure 1 MRI images showing new onset left intraocular metastasis. (A) MRI performed 3 months prior to presentation showing normal intraocular cavities. (B) MRI performed on presentation showing a left intraocular metastasis occupying >50% of the intraocular cavity.

case. She had received five cycles of chemotherapy at the time of presentation and was otherwise well with no weakness or speech deficits. She had no history of diabetes, cardiac disease or melanomas. She was an ex-smoker with an unremarkable alcohol history.

On examination, she had an isolated painless left temporal haemianopia. The remaining visual fields were intact. Her neurological examination was otherwise unremarkable with no diplopia or nystagmus. Fundoscopy was unremarkable. Her chest was clear to auscultation and heart sounds were normal.

INVESTIGATIONS

A MRI scan of her brain showed an isolated left intraocular lesion (figure 1), which occupied more than 50% of the intraocular vitreous cavity. The lesion resided on the medial and posterior borders of the intraocular cavity and was most likely to be an intraocular metastasis. Her MRI did not show any other new metastases (figure 1). The intraocular lesion was not present in a MRI scan performed 3 months prior to presentation (figure 1). Her staging CT scan of chest, abdomen and pelvis showed multiple metastatic lesions in the liver and large bowel, confirming disease progression.

All baseline investigations including blood tests, electrocardiogram and chest x-ray were unremarkable.

DIFFERENTIAL DIAGNOSIS

Intraocular metastasis from NSCLC

Stroke was unlikely, given the gradual of visual field loss and convincing MRI showing intraocular metastasis.

TREATMENT

The patient was referred to an ophthalmology specialist. Due to the size of the tumour and location, surgical resection was considered unsuitable. Chemotherapy was considered but since the metastases developed while on cisplatin and pemetrexed, further chemotherapy was unlikely to be successful in restoring vision. External beam radiotherapy was considered but deemed unsuitable, due to the size of the tumour and our patient's palliative status. Furthermore, after discussions with the patient, she refused to undergo radiotherapy and preferred palliative management. Therefore, conservative management was carried out.

OUTCOME AND FOLLOW-UP

The patient's staging CT scan displayed disease progression despite chemotherapy and she was managed palliatively.

DISCUSSION

This case was interesting for two reasons. First, it exemplified a precise correlation between the symptomatic presentation of haemianopia and the position of metastasis on MRI imaging. Second, it demonstrated the difficulties in managing a patient with metastatic cancer to a relatively uncommon site.

Intraocular metastases and lung cancer

The eyes are relatively rare sites for metastases development,⁴ although it has been reported to represent up to

12% of distant metastases.⁵ Lung cancer is the commonest source, second only to breast cancer.⁴ An early study by Ferry and Font estimated that, lung cancer represented 30% of primaries in an analysis of 227 cases of ocular metastases.⁶ Later in 1997, Shields *et al* found in a survey of 520 uveal metastases that, 21% originated from the lung.⁷ Intraocular metastases have been reported to originate from both small cell lung cancer and NSCLC.⁴ Our patient developed intraocular metastasis with advanced disease, however, such metastasis can manifest as the first presentation of lung cancer.¹⁻³

Although lung cancer is a common cause of intraocular metastases, these metastases are relatively rare in patients with lung cancer. In 1983, Nelson *et al* reported the frequency of ocular metastases to be 6.7% in autopsies of lung cancer patients (n=716).⁸ In a smaller study in 2002, Kreusel *et al* found ocular metastases in approximately 7% of advanced lung cancer patients (n=84).⁹ In a more recent paper by Su *et al*, 16 symptomatic patients with ocular metastases were identified from a pool of 8484 patients diagnosed with lung cancer between 1992 and 2004.⁴ The incidence of ocular metastases was less than 1%, which was much lower than previously reported.⁴ The authors stated this was due to only selection of patients who had symptomatic intraocular metastases, suggesting that a large proportion of these metastases are asymptomatic.⁴ Inevitably, many of these asymptomatic metastases would remain undetected. Intraocular metastases usually present with visual blurring and reduction in visual acuity. Complete blindness in a particular visual field, as demonstrated in this case, is rarely reported. This could be due to either a rapid progression of the intraocular lesion in our patient or a delay in presentation to medical services.

Treatment of intraocular metastases

External beam radiotherapy is the corner stone of treatment for ocular metastases,⁴ although recent reports have highlighted chemotherapy as a viable alternative.¹⁰ Singh *et al* reported improvements in visual acuity of one patient with ocular metastasis after three cycles of gemcitabine and carboplatin treatment.¹⁰ However, both his primary tumour and metastases were responsive to chemotherapy, while our patient was unresponsive and showed disease progression. Furthermore, Singh's patient received different chemotherapeutic agents. Chemotherapy would not have been appropriate in our patient given, the poor response and disease progression on CT scan. In hindsight, we could have trialled alternative chemotherapeutic agents but our patient expressed a wish for palliative management.

Biological agents such as bevacizumab (Avastin; Genetech, San Francisco, CA, USA), a humanised anti-vascular endothelial growth factor monoclonal antibody, and erlotinib (Tarceva; Genetech, San Francisco, CA, USA), an epidermal growth factor inhibitor, have been reported to be effective in treatment of intraocular metastasis in NSCLC.¹¹ Kim *et al* described complete regression of a choroidal metastasis secondary to bevacizumab and erlotinib in a patient with metastatic pulmonary adenocarcinoma.¹¹ It was thought that, the antiangiogenic effects of these biological agents played a key role in their therapeutic results. There are no large trials in the literature to demonstrate the reproducibility of this therapeutic potential.

Brachytherapy is another option available for the management of intraocular malignancies and has been used in the treatment of intraocular melanomas.¹² The collaborative ocular melanoma study that conducted multicentre randomised trials, comparing radiotherapy and the traditional therapy of enucleation, failed to show a difference in survival.¹² Iodine-125 brachytherapy has been reported to be successful in the treatment of choroidal metastasis¹³ but large studies are lacking to demonstrate the reproducibility of its use in intraocular metastases. Brachytherapy was, however, unavailable in this setting for our patient due to facility constraints.

CONCLUSION

We presented a patient with an isolated left temporal haemianopia secondary to an intraocular metastasis from NSCLC. At the time of presentation, other secondary metastases were found on the staging CT scan in the liver and large bowel. These changes occurred despite ongoing treatment with chemotherapy. She was referred to an ophthalmology specialist but after discussions with the patient, external beam radiotherapy was not given and our patient was managed palliatively due to the advanced stage of her disease and failure to respond to chemotherapy. The patient expressed a wish to be managed palliatively.

Learning points

- ▶ Metastases are the commonest intraocular tumours
- ▶ Intraocular metastasis should be considered in all lung cancer patients presenting with visual field defects.
- ▶ Treatment includes radiotherapy and chemotherapy, taking into account of the wishes of the patient.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Asteriou C**, Konstantinou D, Kleontas A, *et al*. Blurred vision due to choroidal metastasis as the first manifestation of lung cancer: a case report. *World J Surg Oncol* 2010;**8**:2.
2. **Koçak Z**, Tabako lu E, Benian O, *et al*. Bilateral choroidal metastases as an initial manifestation of small-cell carcinoma of the lung. *Tuberk Toraks* 2006;**54**:61–4.
3. **Shields JA**, Shields CL, Eagle RC, *et al*. Diffuse ocular metastases as an initial sign of metastatic lung cancer. *Ophthalmic Surg Lasers* 1998;**29**:598–601.
4. **Su HT**, Chen YM, Perng RP. Symptomatic ocular metastases in lung cancer. *Respirology* 2008;**13**:303–5.
5. **Bloch RS**, Gartner S. The incidence of ocular metastatic carcinoma. *Arch Ophthalmol* 1971;**85**:673–5.
6. **Ferry AP**, Font RL. Carcinoma metastatic to the eye and orbit. I. A clinicopathologic study of 227 cases. *Arch Ophthalmol* 1974;**92**:276–86.
7. **Shields CL**, Shields JA, Gross NE, *et al*. Survey of 520 eyes with uveal metastases. *Ophthalmology* 1997;**104**:1265–76.
8. **Nelson CC**, Hertzberg BS, Klintworth GK. A histopathologic study of 716 unselected eyes in patients with cancer at the time of death. *Am J Ophthalmol* 1983;**95**:788–93.
9. **Kreusel KM**, Wiegel T, Stange M, *et al*. Choroidal metastasis in disseminated lung cancer: frequency and risk factors. *Am J Ophthalmol* 2002;**134**:445–7.
10. **Singh A**, Singh P, Sahni K, *et al*. Non-small cell lung cancer presenting with choroidal metastasis as first sign and showing good response to chemotherapy alone: a case report. *J Med Case Reports* 2010;**4**:185.
11. **George B**, Wirosko WJ, Connor TB, *et al*. Complete and durable response of choroid metastasis from non-small cell lung cancer with systemic bevacizumab and chemotherapy. *J Thorac Oncol* 2009;**4**:661–2.
12. Ocular Melanoma Study Group. The COMS Randomized Trial of Iodine 125 Brachytherapy for Choroidal Melanoma Twelve-Year Mortality Rates and Prognostic Factors: COMS Report No. 28. *Arch Ophthalmol* 2006;**124**:1684–93.
13. **Malaviya L**, Shields CL, Turaka K, *et al*. Choroidal metastasis from hepatocellular carcinoma, diagnosed by fine needle aspiration biopsy and treated by iodine-125 brachytherapy. *Graefes Arch Clin Exp Ophthalmol* 2011;**249**:1095–8.

This pdf has been created automatically from the final edited text and images.

Copyright 2011 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit

<http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Liu A, Saman H, Pusalkar P. Unilateral temporal haemianopia in a patient with non-small cell lung cancer: intraocular metastasis despite chemotherapy. *BMJ Case Reports* 2011;**10**:1136/bcr.06.2011.4327, date of publication

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow