CASE REPORT

A case of misconstrued proptosis

Patrick J T Chiam,¹ Vivian W-M Ho,¹ Alan D Hubbard,¹ Suboda Weerasinghe²¹Eye Care Centre, Leighton Hospital, Crewe, Cheshire, UK²Department of Pathology, Leighton Hospital, Crewe, Cheshire, UK**Correspondence to**Patrick J T Chiam,
pjchiam@yahoo.com**SUMMARY**

This case illustrates an overlooked metastatic lung carcinoma to the orbit. The rapid onset of symptoms and oedema mimicked a cellulitis. The patient was initially treated with a broad-spectrum topical and intravenous antibiotic therapy. The white blood cell count (WBC) and C reactive protein (CRP) were normal. Compressive optic neuropathy and serous retinal detachment ensued. The initial chest x-ray revealed lung shadows; however, this was not reviewed. Eventually, CT of the chest was organised and showed a lung mass. The management of such a case remains a challenge for the uninitiated, and high index of suspicion is required to ensure early appropriate management. Despite complete resolution of the swelling with sequential chemotherapy (cisplatin and etoposide) and radiotherapy, the visual prognosis remained grim.

BACKGROUND

A patient was initially misdiagnosed with an orbital cellulitis after he presented with an acute proptosis, erythematous eyelids and increasing blurring. Metastasis is a great masquerader, and we would like to share the pitfalls and lessons learnt in this case.

CASE PRESENTATION

A 74-year-old gentleman presented with an acute left proptosis and maxilla swelling. The symptoms started 3 days prior to his initial review and the left

vision deteriorated over the same period. He complained of some discomfort; however, no pain. There was no history of trauma and he was well systemically. There was no significant ophthalmic or medical history. He smoked 40–60 cigarettes a day for more than 50 years. The patient was not on any prescription or over the counter medication. He had no fever. His acuities were 6/9 in the right eye and 6/36 in the left. The Ishihara scores were 13/13 and 11/13. There was no relative afferent pupillary defect (RAPD). There was marked restriction of the left ocular movement in all directions. There was left non-axial proptosis with marked conjunctival vessel dilation and massive chemosis inferiorly (figure 1). The left maxilla was oedematous, non-tender and fluctuant to palpation. He was unable to close his left eye completely. There was left inferior corneal exposure keratopathy. There was no inflammatory activity in the eye, and dilated funduscopy revealed tortuous retinal vessels. There was no retinal detachment. The right eye examination was unremarkable.

INVESTIGATIONS

The CRP was 31 mg/l and WBC normal. There was hyponatraemia of 121 mmol/l. The FBC (full blood count), liver, thyroid and renal functions were normal. The orbital CT scan revealed a 5×5×5 cm³ encapsulated mass in the posterolateral aspect of the maxillary sinus with bone erosion

Figure 1 Acute left proptosis, upward globe displacement, marked chemosis and maxillary oedema.

To cite: Chiam PJT, Ho VW-M, Hubbard AD, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008410

Figure 2 Sagittal view of the left orbit showing a mass arising from the orbital floor compressing the globe and optic nerve.

(figures 2 and 3). Blood culture revealed no growth after 72 h. Based on the CT orbital scan, the admitting ophthalmologist's preliminary diagnosis was orbital cellulitis. The subsequent requested chest x-ray was not reviewed.

DIFFERENTIAL DIAGNOSIS

- ▶ Orbital cellulites
- ▶ Idiopathic inflammatory orbital disease
- ▶ Thyroid orbitopathy
- ▶ Atypical metastatic carcinoma—unlikely (was not in the initial differentials prior to CT orbit)

TREATMENT

A provisional diagnosis of infective orbital cellulitis was made. He was started on topical ciprofloxacin and gentamicin, and intravenous cefuroxime, gentamicin and metronidazole.

OUTCOME AND FOLLOW-UP

The patient was admitted in the evening for an antibiotic treatment after presenting to the oncall ophthalmologist. After poor resolution of signs, he was started on oral steroid on day 3 of admission. He was reviewed by a different ophthalmologist the following day. The patient had no fever throughout the admission. The WBC remained normal and CRP was not significantly raised which was highly unusual for an orbital cellulitis. At this point, the initial chest x-ray was reviewed. There was shadow in

Figure 3 Axial view revealed the extend of the mass.

Figure 4 A well-demarcated shadow in the right lobe of the lung.

the right upper lobe (figure 4). Given his premorbid smoking history, high clinical suspicion raised the possibility of a lung primary based on the plain chest x-ray, which led to the undertaking of a CT scan. A deep tissue biopsy of the left maxilla was performed. The histology report suggested poorly differentiated highly malignant neoplasm which showed neuroendocrine features (figure 5). The differential diagnosis lies between a small cell, poorly differentiated neuroendocrine and Merkel cell carcinomas. The chest–abdomen CT scan revealed a $6.6 \times 7.4 \times 6.0 \text{ cm}^3$ soft attenuated mass abutting the underlying pleural surface. There was a bony erosion of the adjacent rib and lymphadenopathy at the para-tracheal region in the right upper lobe. The abdominal organs were unremarkable.

The patient was sent to a tertiary centre for assessment especially after a RAPD and retinal detachment had developed on day 6. Surgical removal or debulking of the mass was not recommended.

A bronchoscopy was performed; however, direct visualisation of the lesion for biopsy was not achieved. The patient care was discussed in a multidisciplinary team oncology meeting. Despite the unsuccessful visualisation with bronchoscopy, a provisional diagnosis of the extensive stage of small cell lung carcinoma was made. The decision was taken so that treatment can be started promptly.

The patient had hyponatraemia, despite normal renal, adrenal and thyroid functions. This was likely caused by the syndrome

Figure 5 Poorly differentiated mitotic figures.

of inappropriate antidiuretic hormone hypersecretion associated with small cell lung carcinoma. This was confirmed on urinary sodium and osmolality.

Since undergoing sequential chemotherapy (5 cycles of cisplatin and etoposide) and radiotherapy in a tertiary cancer treatment centre, the orbital mass has drastically reduced in size; however, the left vision remained at light perception. The tumour in the lung had shrunk significantly and the patient awaits further chemotherapy.

DISCUSSION

This case illustrates the challenge involved in managing an acute proptosis. The patient was initially treated for a presumed infective cause due to the rapid onset of symptoms and signs. However, the diagnosis was revised after the normal WBC, hyponatraemia and chest x-ray lesion were noted.

Orbital metastases are a rare manifestation of systemic malignancies and account for about 1–13% of all orbital tumours.^{1–10} Breast and lung tumours have been reported to be the commonest primary neoplasms spreading to the eye. Metastases to the orbit develop in approximately 0.7–12% of patients with lung cancer.^{8–10} It has been found that 30–61% of the patients with orbital metastases have no history of primary cancer at the time of ocular presentation.^{9 11}

However, the occurrences of metastatic lesions in the eye suggest the haematogeneous spread of cancer. So, the lesions are considered preterminal events that occur at the final stage of lung carcinoma, when the majority of the patients will already suffer typical lung carcinoma symptoms, and the mean survival is usually not expected to be more than 5–6 months.^{12 13}

There are mixed views reported in the literature regarding surgical extirpation of the orbital mass. Some recommended management should be discomfort relieving, since surgery is likely to only further spread the metastasis in a patient with limited lifespan.¹ However, surgical debulking of the tumour in patients with compressive optic neuropathy has been reported to be the optimum treatment and visually restorative.⁴ Subsequent prompt radiotherapy or chemotherapy or both may serve to destroy any metastatic cells due to surgical seeding.

No difference in survival was detected between those who presented with orbital lesions with or without a known primary neoplasm.⁴ Regardless of the primary tumour type, prognosis is poor because patients with orbital metastases are usually at an advanced stage of the disease. The mean survival time has been reported to be 7.4 months.¹⁴ In another report, the median survival time was 1.3 years, and the 2-year survival rate was 27%.¹⁵ The survival duration was not significantly different among patients with different types of primary neoplasms.

This case illustrates the importance of a thorough work-up for patients with orbital metastasis. In such a patient, prompt investigations should be considered. The management of such cases remains a challenge with mixed views regarding surgical removal.

Learning points

- ▶ Not all acute proptosis patients had orbital cellulitis.
- ▶ Pay attention to the infective and inflammatory markers in acute proptosis.
- ▶ Lung shadow on chest x-ray, hyponatraemia and heavy smoking history should have alerted the physician to look for the possible lung carcinoma.
- ▶ A chest x-ray may not have been requested for the uninitiated. However, to have done one, the requester should attempt to review it or, if uncertain, seek advice from a radiologist.

Contributors VW-MH admitted the patient and organised the initial investigations. PC reviewed, helped to manage the patient and wrote up the manuscript. AH performed the biopsy and helped to refer the patient to a tertiary centre. SW provided the pathology slides and report.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Konoglou M, Zarogoulidis P, Porpodis K, *et al.* Exophthalmos as a first manifestation of small cell lung cancer: a long-term follow-up. *Case Rep Ophthalmol* 2011;2:360–6.
- 2 Velten IM, Gusek-Schneider GC, Tomandl B. Diplopia as first symptom of a bronchogenic carcinoma. *Klin Monatsbl Augenheilkd* 2000;217:52–4.
- 3 Goldberg R, Rootman J. Clinical characteristics of metastatic orbital tumors. *Ophthalmology* 1990;97:620–4.
- 4 Char DH, Miller T, Kroll S. Orbital metastases: diagnosis and course. *Br J Ophthalmol* 1997;81:386–90.
- 5 Ahmad SM, Esmali B. Metastatic tumors of the orbit and ocular adnexa. *Curr Opin Ophthalmol* 2007;18:405–13.
- 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 Bloch RS, Gartner S. The incidence of ocular metastatic carcinoma. *Arch Ophthalmol* 1971;85:673–5.
- 8 Eliassi-Rad B, Albert DM, Green WR. Frequency of ocular metastases in patients dying of cancer in eye bank populations. *Br J Ophthalmol* 1996;80:125–8.
- 9 Albert DM, Rubenstein RA, Scheie HG. Tumor metastasis to the eye. I. Incidence in 213 adult patients with generalized malignancy. *Am J Ophthalmol* 1967;63:723–6.
- 10 Jakobiec F, Rootman J, Jones I. Secondary and metastatic tumors of the orbit. *Clin Ophthalmol* 1998;2:51–64.
- 11 Font RL, Ferry AP. Carcinoma metastatic to the eye and orbit. III. A clinicopathologic study of 28 cases metastatic to the orbit. *Cancer* 1976;38:1326–35.
- 12 Stephens RF, Shields JA. Diagnosis and management of cancer metastatic to the uvea: a study of 70 cases. *Ophthalmology* 1979;86:1336–49.
- 13 Freedman MI, Folk JC. Metastatic tumors to the eye and orbit. Patient survival and clinical characteristics. *Arch Ophthalmol* 1987;105:1215–19.
- 14 Kennerdell JS, Slamovits TL, Dekker A, *et al.* Orbital fine-needle aspiration biopsy. *Am J Ophthalmol* 1985;99:547–51.
- 15 Goldberg RA, Rootman J, Cline RA. Tumors metastatic to the orbit. *Surv Ophthalmol* 1990;35:1–24.

Copyright 2013 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.

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