Unusual presentation of more common disease/injury

A rare ophthalmic presentation of pituitary metastases

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Summary

Metastasis to the pituitary gland is very uncommon and a first presentation of any systemic tumour through pituitary metastasis is rare. The authors report an 82-year-old Caucasian woman, well-controlled hypertensive and moderate smoker who presented with worsening diplopia. On ocular motility examination she had partial right third nerve paralysis along with reduced vision in the right eye and headache. MRI brain showed a large growth in the pituitary gland consisting with radiological features of pituitary macroadenoma. The initial chest x-ray showed a non-specific shadow that raised some suspicions and a CT scan of her thorax confirmed a right central bronchial carcinoma. The authors suggest that pituitary gland metastases be considered as part of the differential diagnosis for any patient presenting with a pituitary lesion, as pituitary disease could be the first manifestation of an underlying malignancy.

BACKGROUND

Pituitary metastases are very rare and the most common clinical presentation with a pituitary metastasis is diabetes insipidus, which may be the first manifestation of the underlying tumour. We present a case who presented with an ophthalmoplegia, headache and reduced vision and later on diagnosed with pituitary metastases.

CASE PRESENTATION

An 83-year-old woman presented to the eye casualty department with a history of progressive horizontal diplopia, fronto-occipital headache and reduced vision in her right eye over a period of 1 month. On examination, she had complete right ptosis with partial oculomotor nerve paralysis with pupil involved. Best corrected visual acuity was 6/18 right and 6/6 left eye, respectively. Confrontational visual field analysis showed no absolute scotoma and the optic discs and retinæ were normal. Systemic examination was unremarkable and there was no lymphadenopathy. She reported being a smoker of 10 cigarettes per day over last several decades. Her bloods tests showed an elevated erythrocyte sedimentation rate (ESR) of 82 mm/h with C reactive protein (CRP) of 115 mg/l. There were no associated symptoms of jaw claudication or weight loss. Her white cell count was $18.41 \times 10^9/l$. The initial working diagnosis was that of giant cell arteritis and a temporal artery biopsy was organised but in view of the ophthalmoplegia we arranged an urgent MRI scan of head. The patient was started on 40 mg/day of oral prednisolone at this point and she also had an urgent chest x-ray.

INVESTIGATIONS

The temporal artery biopsy was negative. Chest x-ray showed mild heart enlargement with a perihilar shadowing on right side. Head MRI scan showed a large pituitary tumour with suprasellar extension involving the right cavernous sinus and superiorly the optic chiasm on the right was compressed (figure 1). There was homogenous

enhancement with intravenous gadolinium indicating a likely pituitary macroadenoma (figure 2).

Due to the consolidation in the right lung we arranged urgent CT scan of the thorax. This showed a 2.5 cm soft tissue mass in the right perihilar region with deeper infiltration causing a partial collapse of the middle lobe. It was thought that this was consistent with central bronchial tumour (figure 3). Bronchoscopy was unfortunately not diagnostic. Further haematological and radiological investigations did not show any secondaries.

OUTCOME AND FOLLOW-UP

Subsequent transphenoidal debulking of the pituitary yielded histology showing a metastatic adenocarcinoma of primary lung origin.

DISCUSSION

Metastasis to the pituitary gland is very uncommon and a first presentation of any systemic tumour through pituitary metastasis is rare. There have been few reports of pituitary metastases in the literature. James *et al* found no cases of pituitary gland or sellar metastasis in their cross sectional, retrospective analysis of neuro-imaging (CT and MRI) of 155 patients diagnosed with intracranial metastatic disease.¹ In 1857, L Benjamin first described a case of metastasis to the pituitary gland in an autopsy of a patient with disseminated melanoma.² In patients who present with a pituitary metastasis the primary tumour remains undetected in 3% of cases despite intensive investigation.³

Breast and lung cancers are the most common primary neoplasms metastasising to the pituitary followed by prostate,⁴ renal cell,⁵ gastrointestinal cancers and lymphoma. Some authors hypothesise that breast tumours metastasise to the pituitary more than any other tumour because of the hormonal environment of pituitary gland.

Differentiation of a pituitary metastasis from a primary pituitary neoplasm (adenoma or carcinoma) can be difficult.⁶ Previous literature reviews have suggested that it

may be possible to distinguish pituitary adenomas from pituitary metastases on clinical grounds, but radiographic findings are not helpful in this regard.¹⁻⁶ This was highlighted in our case as the initial radiological diagnosis was that of a pituitary adenoma.

Our patient presented with symptoms of worsening diplopia and reduced vision and not of symptoms of an

endocrine disorder. The most common presentations in cases of pituitary metastasis are diabetes insipidus, headache, panhypopituitarism, visual field defects and ophthalmoplegia.⁷ The fact that diabetes insipidus is the most common presentation in patients with pituitary metastasis reflects a predilection of metastases to the posterior lobe of pituitary.⁸

Prognosis of patients with pituitary metastases is usually poor, because of the location and due to the aggressive

Figure 1 Large pituitary tumour with suprasellar extension which is seen to involve the right cavernous sinus.

Figure 2 Homogenous enhancement after intravenous gadolinium likely to represent a macro adenoma.

Figure 3 There is a 2.5 cm soft tissue mass in the peri-hilar region on the right side causing partial collapse of lung.

nature of the primary neoplasia. Other poor prognostic features are age over 65 years and short duration (<1 year) between initial diagnosis of tumour and pituitary metastasis.

Giant cell arteritis is an ophthalmic emergency. The delay in the diagnosis and its treatment can lead to irreversible loss of vision. Therefore prompt diagnosis and treatment play a crucial role in halting the progression of visual loss and in saving the vision in other eye. In our case, both the ESR and CRP were high increasing the likelihood of giant cell arteritis but the full blood count demonstrated neutrophilia, which is not a feature of giant cell arteritis. Therefore, we arranged an urgent chest x-ray to exclude any incipient pulmonary infection prior to starting the patient on high dose oral steroids for the treatment of giant cell arteritis.

We suggest that pituitary gland metastases should be considered as part of the differential diagnosis for any patient presenting with a pituitary lesion, as pituitary disease could be the first manifestation of an underlying malignancy.

Learning points

- ▶ Pituitary gland metastases should be considered as part of the differential diagnosis for any patient presenting with a pituitary lesion.
- ▶ Exclude other causes of headache/diplopia for example, giant cell arteritis.
- ▶ Take a holistic approach and do full systemic assessment to rule out underlying malignancy in rare cases such as pituitary gland metastases.

Competing interests None.

Patient consent Obtained.

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