An unusual cause for a painful diplopia

Roger A Barker, Paul H Molyneux, Paul Riordan-Eva, Ivan F Moseley, David H Miller, W Ian McDonald

A 77-year-old man with a five-year history of noninsulin dependent diabetes mellitus (NIDDM) presented with a five-week history of headache and a five-day history of diplopia. The headache had increased in severity over the weeks prior to admission and would often wake him at night but was not associated with nausea or vomiting. The diplopia was on looking to the right with horizontal displacement of the images. Previous medical history was unremarkable apart from the NIDDM. He was an ex-smoker of 50 cigarettes a day and had been a dock worker with a history of possible asbestos exposure. On examination there were no systemic abnormalities and neurologically the only abnormality was as shown in the figure (a) when looking to the right. Investigations revealed a normal full blood count and biochemical screen, including liver function tests and calcium. There was a kappa paraprotein of 14.5 g/l, autoantibody screen was negative but erythrocyte sedimentation rate was raised at 62 mm/h. Chest X-ray followed by a computed tomography (CT) scan of the chest revealed an abnormality in the left lung (figure, b, c). The left upper lobe bronchus was narrowed and bronchoscopy showed occlusion of the left upper lobe, and cytology from the bronchial washings was diagnostic. Unenhanced T1-weighted spin echo magnetic resonance imaging (MRI) of the brain showed a lesion that bulged down into the nasopharynx and extended inferolaterally into the right cavernous sinus (figure, d).

Figure (a) The patient attempting to look to the right; (b) chest X-ray; (c) chest CT scan; (d) cranial MRI showing abnormality in region of right petrous apex and right side of clivus (arrow)

Questions

- 1 What cranial nerve palsy did the patient have?
- 2 What would be the differential diagnosis at presentation in this patient?
- 3 What radiological abnormalities are shown and how do these relate to the patient's presentation?

National Hospital for
Neurology and
Neurosurgery, Queen
Square, London WC1N
3BG, UK
RA Barker
PH Molyneux
P Riordan-Eva
IF Moseley
DH Miller
WI McDonald

Correspondence to RA
Barker, Department of
Neurology, Addenbrooke's
NHS Trust, Hills Road,
Cambridge CB2 2QQ, UK

Accepted 20 August 1997

Answers

QUESTION 1

The patient had a complete right sixth nerve palsy.

QUESTION 2

A sixth nerve palsy is not an uncommon finding in clinical medicine, and may be due to a number of different conditions as well as being a false localising sign with raised intracranial pressure.¹ The commonest causes for a sixth nerve palsy, in the 70% of cases where an aetiology can be ascribed, are diabetes mellitus, multiple sclerosis and local infiltration from primary tumours originating in the region of the cavernous sinus.^{1 2 3 4} This last group commonly produces a painful sixth nerve palsy usually with involvement of other cranial nerves.

QUESTION 3

The chest X-ray reveals a mass in the left upper lobe, which on CT is spiculated and involves the lingula as well as the left upper lobe, which

was shown to be a squamous cell carcinoma of the lung on bronchoscopic biopsy. The sixth nerve palsy was therefore due to metastatic disease causing destruction of the apex of the petrous temporal bone.

Metastatic disease is a rare cause of a sixth nerve palsy although the exact incidence is not clear. Shrader and Schlezinger in their 104 patients with sixth nerve palsies had only four cases,² whilst Rucker ascribed the cause to metastatic disease (excluding nasopharyngeal carcinoma) in 56 of 159 cases,³ and Rush and Younge had 30 in their series of 419 isolated sixth nerve palsies.⁴ Certainly, metastatic deposits in the pituitary and temporal bone are not uncommon at *post-mortem* but only rarely do they produce symptoms.⁵

Final diagnosis

Complete sixth nerve palsy due to metastatic disease, causing destruction of the apex of the petrous temporal bone.

Keywords: sixth nerve palsy; metastatic disease; diplopia

1 Miller NR. Topical diagnosis of neuropathic ocular motility disorders. In: Hoyt & Walsh, eds, *Clinical neuro-ophthalmology*, 4th edn, vol 2. Baltimore: Williams & Wilkins, 1985; pp 652–784.

2 Shrader EC, Schlezinger NS. Neuro-ophthalmologic evaluation of abducens nerve paralysis. *Arch Ophthalmol* 1960;63: 84–92.

3 Rucker W. The causes of paralysis of the third, fourth and sixth cranial nerves. *Am J Ophthalmol* 1966;61:1293–8.

4 Rush JA, Younge BR. Paralysis of cranial nerves III, IV and VI: cause and prognosis in 1000 cases. *Arch Ophthalmol* 1981;99:76–80.

5 Jung LYK, Byung-hoon J, Shea D, Paparella MM. Primary and secondary tumors of the facial nerve: a temporal bone study. *Arch Otolaryngol* 1986;112:1269–73.