

BILATERAL THIRD CRANIAL NERVE PALSY SECONDARY TO LUNG CARCINOMA METASTASIS

PARÁLISIS BILATERAL DEL III NERVIO CRANEAL POR METÁSTASIS DE CARCINOMA PULMONAR

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ABSTRACT

Clinical Case: A 58 year-old man with a known diagnosis of a large cell lung carcinoma, developed a progressive diplopia. His examination revealed a double oculomotor nerve palsy with dilated and poorly reactive pupils. A cranial magnetic resonance showed an unique and solitary lesion in the mid-brain, which presumably affected to both oculomotor nucleus and fasciculus. There were not found additional extrathoracic manifestations.

Discussion: This case shows the possibility that a large cell lung carcinoma may cause a double oculomotor nerve palsy as the consequence of an isolated midbrain metastasis (*Arch Soc Esp Oftalmol* 2009; 84: 399-402).

Key words: Third cranial nerve, palsy, midbrain, metastasis, large cell lung carcinoma.

RESUMEN

Caso clínico: Un varón de 58 años, diagnosticado previamente de carcinoma pulmonar de células grandes, desarrolló una diplopía de carácter progresivo. En la exploración se objetivó una doble parálisis oculomotora con pupilas midriáticas y poco reactivas. En la resonancia magnética craneal se evidenció una metástasis única y solitaria a nivel mesencefálico, que afectaba a ambos núcleos y fascículos del III nervio craneal, en ausencia de más manifestaciones extratorácicas.

Discusión: Este caso muestra la posibilidad de que un carcinoma pulmonar pueda causar una doble parálisis oculomotora como consecuencia de una metástasis solitaria de localización mesencefálica.

Palabras clave: III nervio craneal, parálisis, mesencéfalo, metástasis, carcinoma de células grandes de pulmón.

INTRODUCTION

Lung cancer, in addition to being one of the most prevalent types of cancer, is clinically characterized by its extra-thoracic metastatic dissemination (1). The metastatic involvement of the central nervous system is not infrequent at the brain level, although

the appearance of a solitary metastasis affecting the trunk of the encephalus is rare (1,2). This short communication present a case of a single metastasis located in the mesencephalus which produced a neuro-ophthalmological condition of bilateral paralysis of the third cranial nerve in the context of a pulmonary tumoral disease.

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CLINICAL CASE

A 58-year-old male visited the emergency services due to a sub-acute binocular diplopia of at least three months, initially attributed to the side-effects of chemotherapy. The patient had been treated with



Fig. 1: MR sagittal section in T1 mode showing the metastatic lesion adjacent to the third ventricle.

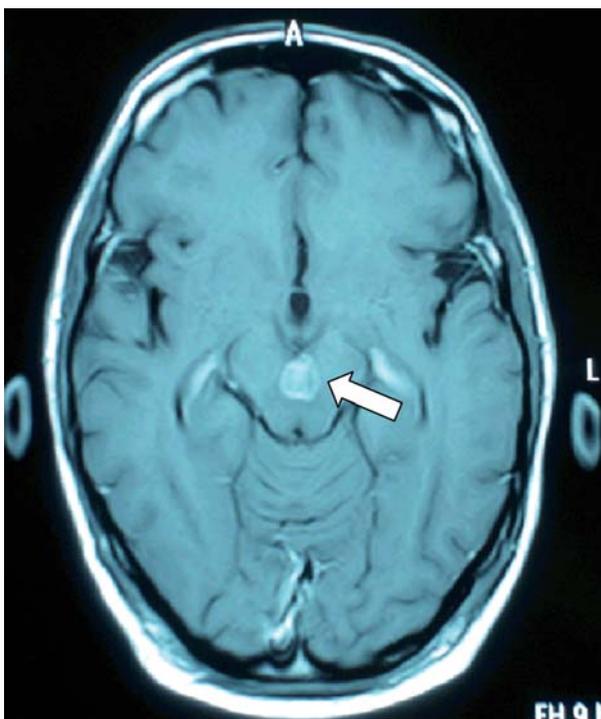


Fig. 2: MR axial section in T1 mode showing the lesion in the central portion of the mesencephalus.

carboxyplatinum/taxol and concomitant radiotherapy cycles due to a large cell pulmonary carcinoma in stage T2N3M0 diagnosed seven months back. The ophthalmological assessment showed a best corrected VA of 0.9 in the right eye (RE) and of 0.8 in the left eye (LE). Both pupils were in middle midriasis with low reactivity to light and convergence. The extrinsic ocular motility showed an exotropia of -50 dp (prismatic dioptres) with RE predominance but with alternating fixation capacity. The RE exhibited supraduction (+++) and adduction (++) limitations even though abduction was maintained. The LE exhibited an almost complete palpebral ptosis and a severe limitation of supraductions (+++), adduction (++) and infraductions (+++) with preservation of abduction. Segmental biomicroscopy was normal as well as the intra-ocular pressure in both eyes (BE). The eye fundus assessment did not reveal pathological alterations. Similarly, the neurological exploration did not exhibit any clinical alteration.

A brain magnetic resonance (MR) was taken, which evidenced a solitary lesion in the posterior region of the third ventricle floor (fig. 1). Said lesion had a hypertense ring-shaped appearance with a hypotense central portion suggesting necrosis with bilateral involvement of the nuclei and fascicles of the third cranial nerve in the central mesencephalus (fig. 2).

DISCUSSION

The isolated and bilateral paralysis of the third cranial nerve is not a frequent clinical condition. It has been described associated to central lesions of the brainstem (ischemic infarcts, mesencephalic blood clots, primary or secondary tumors), but more frequently as a consequence of peripheral causes such as diabetes mellitus, vasculitis (Wegener granulomatosis, temporal artery arteritis), infections (Lyme's disease and syphilis) and cavernous sinus tumors or bilateral processes of the orbitary apex (3).

On the other hand, the literature has reported isolated cases of tumor metastasis (lung, skin or breast melanoma) located in the mesencephalus and giving rise to third cranial nerve palsy (1,2,4). The core of the third cranial nerve is actually a group of sub-nuclei arranged in the mid-sagittal plane of the dorsal mesencephalus. The caudal nucleus is odd and

innervates both upper eyelid elevators. The motor sub-nuclei of the middle and lower rectum and lower oblique are even and project ipsilaterally. However, the projections of the sub-nucleus of the superior rectum branch out within the complex to innervate the contralateral muscle. This explains the high frequency of the bilateral involvement in nuclear location palsies. The parasympatic fibres derive from the Edinger-Westphal nucleus which is also even and occupies the rostral position of the complex. Accordingly, the topographic arrangement of this complex accounts for the highly variable oculomotor conditions produced by tumor metastasis at the level of the mesencephalus, depending on the location and size of the lesion. Complete palsies of the third cranial nerve have been described accompanied with contralateral eyelid ptosis in addition to limitations of the eye elevation (also contralateral, proper nuclear palsy) as well as isolated palsies of some straight muscle or isolated ptosis (uni- or bilateral) with or without involvement of pupillary motility (4.5).

In the instant case, the period of diplopia evolution was long and the mesencephalic lesion had reached a significant size. The patient exhibited dual third cranial nerve palsy, more prevalent in the left side, which corresponded to the involvement of both nuclei and fascicles according to the findings of the neuroimaging tests. It is possible that in ear-

lier growth stages of the metastasis, the patient could have exhibited oculo-motor signs of the nuclear type. To treat this condition, holocranial radiotherapy sessions were planned but the patient went into coma and died before beginning the sessions.

This case emphasizes the infrequent possibility that a large cell pulmonary carcinoma may cause a single metastasis located at the mesencephalic level and clinically expressing as a bilateral oculomotor palsy.

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