Case Report

Squamous Lung Cell Carcinoma Inside a Meningioma

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We present a 71-year-old male, former smoker of 40 cigarettes/day, operated from bladder adenocarcinoma in 2008, free of disease to date. Admitted to the hospital in December 2021 for seizures. He had two previous episodes months before without further study. No respiratory symptoms were associated. After hospitalization the study was completed and the cranial CT (Fig. 1b) revealed a hyperdense intracranial extra-axial mass adjacent to the right frontal and temporal lobes deviating the central line compatible with a meningioma, and a left pulmonary mass was found later in the X-ray. The thorax CT revealed a pulmonary mass in the left upper lobe (LUL) (Fig. 1a) contacting the pleura, without hilar nor mediastinal enlarged lymph nodes. PET-CT was done, and endobronchial ultrasound ruled out lymphatic node infiltration. Core needle biopsy of the lung was insufficient for the diagnosis. After management agreement by a multidisciplinary team, the patient underwent a LUL VATS lobectomy in May 2022. Pathology results were compatible with squamous lung cell carcinoma.

A craniectomy with lesion excision was done in November 2022, and pathology reported squamous lung cell metastasis inside a meningioma tumour (Fig. 1c and d).

Massive sequencing (NGS) from both tumours was done in DNA and RNA, detecting a single nucleotide change in FGFR3 p.(R248C), and also copy numbers variations in PIK3CA and CDKN2A supporting the diagnosis of primary lung tumour with metastasis to meningioma.

After the surgery the patient suffered from secondary hydrocephalus and needed a ventriculoperitoneal shunt. During the follow-up in January 2023 in a CT hepatic lesions were found compatible with disease extension and chemotherapy was initiated, unfortunately the patient died due to progression a few months later.

The occurrence of metastases of malignant tumours into cranial tumours, known as “tumour-into-tumour” phenomenon is unusual although has been described decades ago, and has occasionally has been reported in the literature.\footnote{The most common tumours in the brain are metastasis, and meningioma is the most common primary brain tumour, which is usually benign and arises from the meninges in the CNS.\cite{1,2} The area of meningioma is very rich in perfusion so it could be a target for metastatic spreading from other cancers. As available in the literature, the origin of metastatic neoplasm in 33.56% is breast cancer, 28% lung, 8.72% renal and 7.38% prostate tumours, less frequent being gastrointestinal, haematological, lymphomas or melanomas. Metastasis in 98% are from haematogenous origin. In 36.69% the tumour-to-meningioma metastasis was the first sign of cancer and 53.63% of patients had a previously diagnosed neoplasm.\cite{2}}

Tumour-to-meningioma metastasis is infrequent but should be considered as a diagnosis in patients with active cancer who develop neurological symptoms and have a newly diagnosed meningioma, but also in those considered in cancer remission in which a meningioma arises.\footnote{Cancers that metastasize to meningiomas are usually breast cancer, lung cancer, renal cancer, prostate cancer, gastrointestinal cancers, haematological cancers, lymphomas and melanomas. The most common site for metastasis from these cancers is the cerebral cortex, followed by deep grey matter. The most common metastatic sites are the pons, cerebellum, thalamus, basal ganglia, brainstem, and midline structures. The most common diagnostic features are extracranial metastasis, cavitary lesions, homogenous and hypodense masses, and contrast enhancement. The most common differential diagnosis is glioblastoma multiforme (GBM).}

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malignant meningiomas are not the same that usually metastasize to the brain.\textsuperscript{2}

Conflict of Interests

The authors state that they have no conflict of interests.

References