Early detection and treatment of brainstem paraneoplastic syndrome associated with lung adenocarcinoma

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INTRODUCTION

Paraneoplastic syndromes have been reported in all types of lung cancer, but more frequently in small cell lung cancers, due to its origin in neuroendocrine cell precursors.
The most frequent associated syndromes described in literature are neurological and endocrine.
In most patients paraneoplastic syndromes occur prior to other symptoms of malignancy. The presence or the severity of these syndromes is not correlated with the stage of cancer. Most of the paraneoplastic syndromes disappear once the primary tumor is removed and reappear in case of cancer recurrence or metastasis.

CASE REPORT

We present a case of a 64-year old woman admitted to our hospital for an episode of hypotension associated with vomiting and severe nausea. She had a 6 months history of headache and imbalance, therefore she took anti-inflammatory and basic drugs for vertigo, following the advice of the general practice doctor, with some benefit. In the last period these symptoms were getting worse and it was attributed by the patient to a period of personal stress. Neurological examination revealed midbrain and cerebellar symptoms such as dysdiadochokinesia, nystagmus, mild dysarthria, vertigo and ataxia. The brain MRI revealed a symmetric and bilateral T2-hyperintensity and diffusion restriction in the midbrain region .
Further laboratory examinations were conducted to validate the cause of neurological symptoms. Cerebrospinal fluid revealed an elevated level of cells (82/mmc; normal: 0-5), protein (176,30 mg/dl, normal 15-45), IgG (82,80 mg/L , normal 13-21). No neural auto-antibodies (anti-Purkinje cells, anti-granule cells, anti-nucleolin, anti-GABAergic synapses, DOT-BLOT IgG - Ravo) were detected, neither in serum nor in cerebro-spinal fluid (CSF). The cytology of CSF revealed the presence of likely epithelial cells. Serum oncomarkers were negative. Suspecting a neoplastic pathology, we performed a full body CT scan that revealed a solid non-calcified nodule in the right middle lung lobe with an increased uptake at the PET CT scan.
The patient underwent lobectomy and the histological examination of the lesion revealed an adenocarcinoma CK7+/TTF1+ with a likely lung origin staged IA, pT1apNX.
A successive MRI revealed an extension of the hyperintensity at the cerebellum and an initial ventricular dilatation with areas of trans-ependimal resorption .The study of the dynamic CSF flow revealed a regular flow in the aqueduct of Sylvius.
The patient went on to receive the chemotherapy Afatinib (inhibitor of the proteins of the family ERBb) and, on repeating the MRI 6 months later from the beginning of the therapy, there was a reduction of the T2-Hyperintensity on the midbrain and cerebellum together with a reduction of the ventricular dilatation and of the areas of trans-ependymal resorption. The neurological symptoms had a progressive general improvement.

CONCLUSIONS

The case highlights the need to look for paraneoplastic sindrome to discover malignancies early, at a treatable stage.

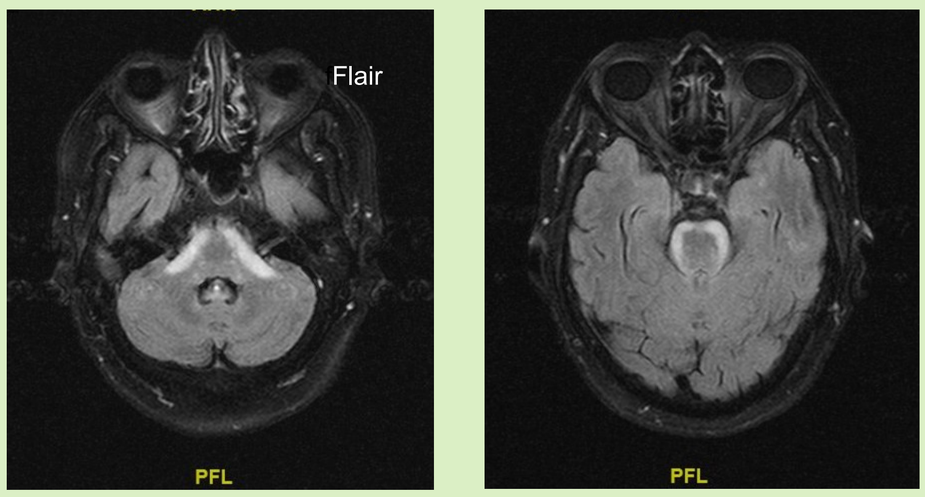

Fig 1 e 2: *Brainstem hyperintensity before surgery and chemotherapy (Feb-2015)*

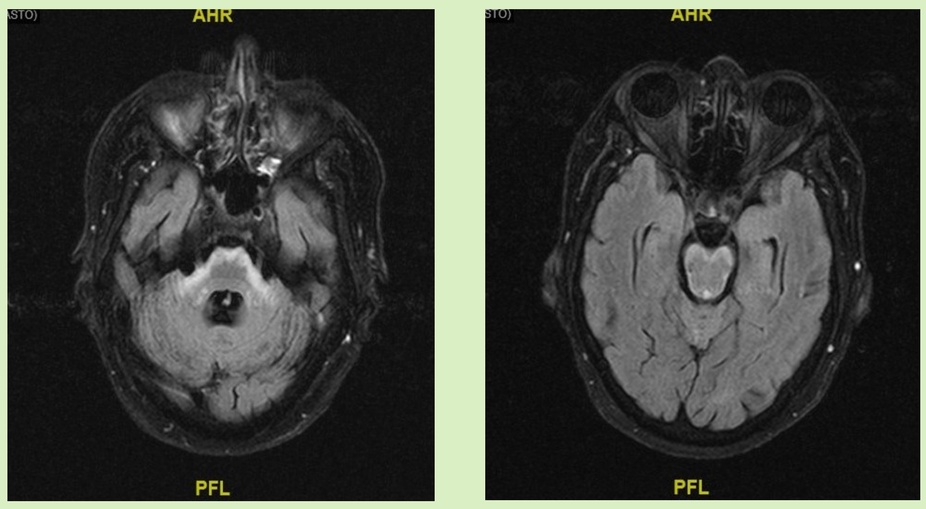

Fig 3 e 4*: Reduction of hyperintensity after surgery and chemotherapy (Sep-2015)*

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