

Solitary Non Small Cell Lung Cancer Metastasis to the Hypophysis: A Case Report

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Abstract

Introduction: There are few cases in the literature pituitary metastasis. In this situation, 20% of metastases are from lung cancers. In most cases are asymptomatic, being diagnosed by imaging tests, but poor patient prognosis.

Case Presentation: A 65-years-old, Brazilian-Caucasian, male patient was admitted with clinical weight loss, fever and appetite loss. Imaging studies show lung mass and mass lesion and sellar and suprasellar. His blood hormone profile was compatible with secondary pan-hypopituitarism due to destruction of hypophysis. A biopsy confirmed a metastatic lesion from lung adenocarcinoma to the pituitary. The patient was submitted to stereotatic radiotherapy and started chemotherapy with cisplatin 50 mg/m² D1 and D8, and etoposide D1 to D5 each 28 days for two cycles concomitant to 3D-conformational irradiation of the lung nodule and mediastinal lymph nodes, followed by two additional cycles of cisplatin and etoposide as consolidation.

Conclusion: The treatment decision when dealing with isolated non-small cell lung cancer metastasis to the hypophysis, always need a multidisciplinary discussion, since it can range from radiotherapy and chemotherapy to surgery, and its choice is based upon clinical presentation, prognosis and disease extension as well as patient preference, weighing risks and benefits of each available strategy.

Keywords Hypophysis; Lung cancer; Isolated metastasis; Pan-hypopituitarism

Introduction

Metastasis to the hypophysis are rare [1], and breast cancer is the most common neoplasia associated with this presentation, corresponding to 40% of all cases [2,3]. Other less common tumors are: lung (20%), GI (6,3%), prostate (5,0%), kidney (2,6%), melanoma (2,4%), and thyroid (2,1%) cancer [3,4]. Hypophysis metastases are seldom disclosed due to symptoms or radiological evidence [1]. Seventy per cent of cases do not show any anatomical alteration in image studies [1]. The majority of cases are diagnosed postmortem, being observed in 2-20% of cancer patients autopsies, and only 68% reported with some previous correlated symptom [5,6].

When symptomatic, the most frequent clinical manifestation is diabetes insipidus (70%), visual disturbances (20%), cranial nerve paralysis (15%), and hypopituitarism (15%) [3,5]. Patients have a poor prognosis, mainly due to the underlying cancer progression [3], since it is frequently a late event, and is commonly accompanied of multiple metastases to other organs [6]. Median survival after diagnosis is one year only [1]. Isolated lung adenocarcinoma metastasis to the hypophysis is very rare, and few cases have been reported in literature [4,6].

Case Presentation

A 65-yo, Brazilian-Caucasian, male patient was admitted to our institution due to a history of weight loss (5,0 Kg), unexplained fever, hyporexia and lower limbs myalgia during the preceding 60 days. He reported no cough, dyspnea, hemoptysis or chest pain. Patient had no focal neurological symptoms. The patient was a smoker (40 pack-year), but was otherwise previously healthy. A PET-CT scan displayed increased 18-FDG uptake at right cervical paratracheal topography SUV (Standard Uptake Value) 5,5; sella turcica (SUV 12,4) image showed a 22×16 mm expansive lesion; left lung nodule (SUV 6,5) and mediastinal lymph node (SUV 10,8) (Figure 1). A core biopsy from the left lung nodule disclosed a solid pattern adenocarcinoma that stained positive for TTF1, cytokeratin 7 and napsin A. The tumor tested negative for EGFR mutations. A transsphenoidal biopsy of hypophysis was undertaken and was compatible with lung adenocarcinoma metastasis (Figure 2). Mediastinoscopy was performed in an attempt to biopsy the area right paratracheal uptake, but no detectable change in this anatomical topography amenable to biopsy.

The patient was also diagnosed with pan-hypopituitarism (hypogonadotropic hypogonadism, central hypothyroidism, secondary adrenal gland insufficiency, diabetes insipidus) secondary to the malignant lesion. He was treated with prednisone 10 mg/day, sodium levothyroxin 75 mcg/day and nasal desmopresin acetate 4 mcg/day, with complete resolution of symptoms.

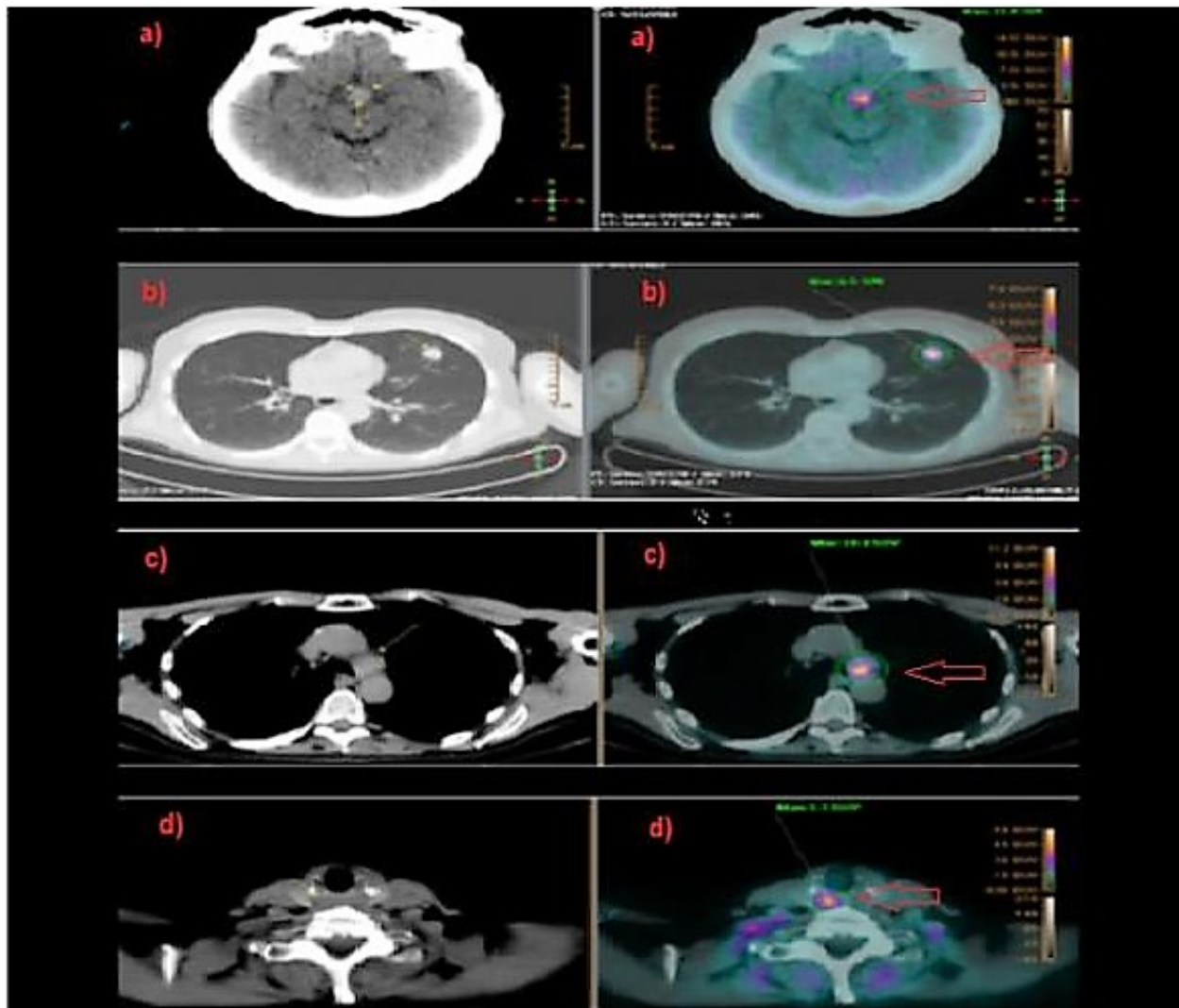


Figure 1: 18-FDG PET-CT scan. MPG1; a: Hypermetabolic area with (SUV-12,4) in hypophysis topography; b: Abnormal 18-FDG uptake in anterior upper left lung lobe (SUV-6,5); c: Increased 18- FDG uptake in mediastinal lymph node (SUV-10,8); d: High 18- FDG uptake in the subaortic region. Although a biopsy was attempted from this area, no lesion was identified on the CT scan.

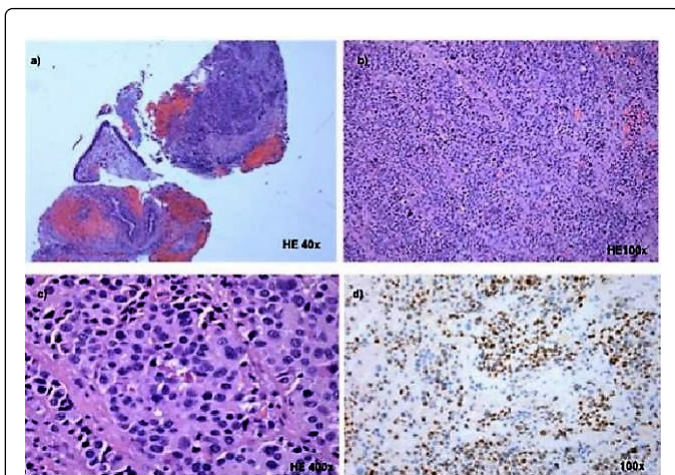


Figure 2: Adenocarcinoma infiltration of hypophysis. MPGC 1; Massive infiltration of hypophysis parenchyma by dense blocks of epithelioid cells. a: Low power field (40X); b: High power field (100X). Hematoxylin and eosin staining (H&E); c: Cells display hyperchromasia, nuclear irregularity and high mitotic index. H&E; d: Tumor cells expressing nuclear TTF1 (clone). Tumor cells were negative for Napsin A, Chromogranin A, Sinaptofisin, Prolactin, FSH, LH, TSH, GH and ACTH.

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After discussion with the lung tumor board, the patient was submitted to stereotatic radiotherapy (10 fractions×4 Gy) to the hypophysis, and started chemotherapy with cisplatin 50 mg/m² D1 and D8, and etoposide D1 to D5 each 28 days for two cycles concomitant to 3D-conformational irradiation of the lung nodule and mediastinal lymph (30 fractions×20 Gy), followed by two additional cycles of cisplatin and etoposide as consolidation (Table 1). After 15 months of treatment the patient died of septic shock lung focus.

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	Value	Normal value
Prolactin	31,0 ng/ml	(2,1-17,70)

Follicle stimulating hormone (FSH)	0,7 mUI/ml	(1,4-18,1)
Luteinizing hormone (LH)	0,07 mUI/ml	(1,5-9,3)
Thyroid stimulating hormone (TSH)	1,24 mUI/ml	(0,5-5,00)
Thyroxine 4 (T4)	0,62 ng/dL	(0,70-1,80)
Adrenocorticotropic (ACTH)	10,4 pg/ml	(5,0-46)
Testosterone	12 ng/dL	(241-827)
Somatomedin C (IGF-1)	39,7 ng/ml	(55 -229)

Table 1: Values for various hormones.

Discussion

We reported here a case of a man diagnosed with an isolated lung adenocarcinoma metastasis to the hypophysis. In the reported cases, these metastasis are more common among men, typically in the sixties or seventies [3,7]. Approximately 70% of metastasis to the hypophysis are located in the posterior lobe or posterior lobe plus previous cases of metastasis to involve the pituitary posterior lobe alone or in combination with the anterior lobe, and the remainder, around 10%, involves only the anterior lobe [7,8]. Metastasis to the hypothesis grows rapidly damaging adjacent structures, and diabetes insipidus is sevenfold more common in this situation [9]. Initial symptoms are unremarkable and depend on tumor size and extension [10]. Our patient presented solely with symptoms related to pan-hypopituitarism secondary to destruction of hypophysis.

Magnetic resonance can be useful in the differential diagnosis of hypophysis lesions [5,6]. Metastasis will show as thickening of the hypophysis stem, loss of signal in the posterior lobe, T1-weighted isointense signal, cavernous sinus invasion, and scarring around the sella turcica [10]. Treatment range from radiotherapy and chemotherapy to surgery [9], and its choice is based upon clinical presentation, prognosis and disease extension [8,10]. Transsphenoidal surgery is indicated to alleviate intractable pain, or when there are signs of intracranial hypertension or visual loss [8]. Radiotherapy is recommended for patients not candidates to surgery or as an adjuvant, and can be delivered in two ways: conventional fractioning (10 fractions of 3,0 Gy, during two weeks) or 3D-stereotatic irradiation, which allows a higher target dose [11]. The higher targeted dose results in better local control and less cognitive impairment, leading to better quality of life [5,11]. In this case, as it presented with an isolated site of metastasis, we decided to proceed like patients with isolated brain metastasis, by directly approaching the hypophysis metastasis with stereotatic radiotherapy, and delivering full dose concomitant chemotherapy and radiotherapy to the lung and mediastinum, despite knowing there is an elevated risk of systemic disease progression.

The treatment decision when dealing with isolated non-small cell lung cancer metastasis to the hypophysis is a challenging one due to its rarity and paucity of data in the literature to guide it, and should always trigger a multidisciplinary discussion with a dedicated thoracic oncology team, as well as with the patient, weighing risks and benefits of each available strategy.

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