Hidden synchronous tumor

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ABSTRACT

Synchronous primary lung carcinoma consists of separate neoplastic processes, histologically identical or different, but occurring in different segments, lobes, or lungs. It is a relatively rare condition, with the reported incidence ranging from 0.26 to 1.33%.[1]
We report the case of a 63-year-old female patient, with smoking habits and a strong familial history of cancer, who was first detected a suspicious lung nodule, consistent with a lung carcinoma. While staging that nodule, a synchronous tumor was surprisingly detected. Even though it is relatively rare, distinguishing synchronous tumors from intrapulmonary metastasis can be an extremely difficult task.

Keywords: Synchronous primary lung carcinoma, smoking habits, staging, intrapulmonary metastasis

INTRODUCTION

Synchronous primary lung carcinoma is a term given to the occurrence of two or more primary lung carcinomas within different parts of the lung in the same time period. They are thought to carry the same pathophysiological mechanism as metachronous lung carcinoma (i.e. two or more primary lung cancers occurring in different parts of the lung spaced in time). Both synchronous and metachronous lung cancers are sometimes cumulatively described under the umbrella term multiple primary lung cancer (MPLC).[2]

While differentiating between MPLC and intrapulmonary metastasis of lung cancer is important for prognosis and treatment strategy, it is also quite complicated, particularly in cases with similar histologies.

As the incidence of lung cancer rises, the number of patients diagnosed with multiple primary lung cancers is also rising[1].

In the vast majority of cases (85–90%), lung cancer is associated with tobacco smoke – includ-

ing passive smoking. Smoking is one commonly known factor responsible for the development of cancer. [3,4] A high smoking load may also contribute to the simultaneous development of several cancers at any point after resection of the primary cancer tumor.[5]

Lung cancer screening has been proven to be efficient in lowering lung-cancer mortality in high-risk persons[6]. Although official screening programs are yet to exist in Portugal, it is already a reality performed by many pulmonology practitioners in an attempt to diagnose lung cancer in earlier stages, especially when high risk patients are concerned.

CASE PRESENTATION

We report the case of a 63-year-old woman, active smoker (smoking load of 25 pack-years), with a significant family history of cancer, with lung cancer from her mother's side, uterine cancer from her sister and esophageal and vocal cords from two other brothers.

The patient was first referred to a pulmonology consultation in 2018 for a persistent cough following a respiratory infection, fatigue and dyspnea with moderate exertion witch lead to a first CT-thoracic scan, that showed a regular, homogenous calcified nodule in the apical segment of the left lower lobe, compatible with a residual granulome/hamartome. Due to the low suspicious aspects of the finding no further investigation was performed and smoking cessation was advised.

Given the strong family history of cancer and the fact that the patient persisted with active smoking habits, she maintained regular follow-up with stability until a CT scan in August of 2021 showed a new subpleural nodular formation (20x17mm), in the anterior segment of the left upper lobe, calcified lymph nodes in the left mediastinum and

Figure 1. CT-thoracic scans (coronal [A] and lateral [B] views) showing the new suspicious supleural nodular formation in the left upper lobe, as well as the stabilized calcified nodule in the left lower lobe.

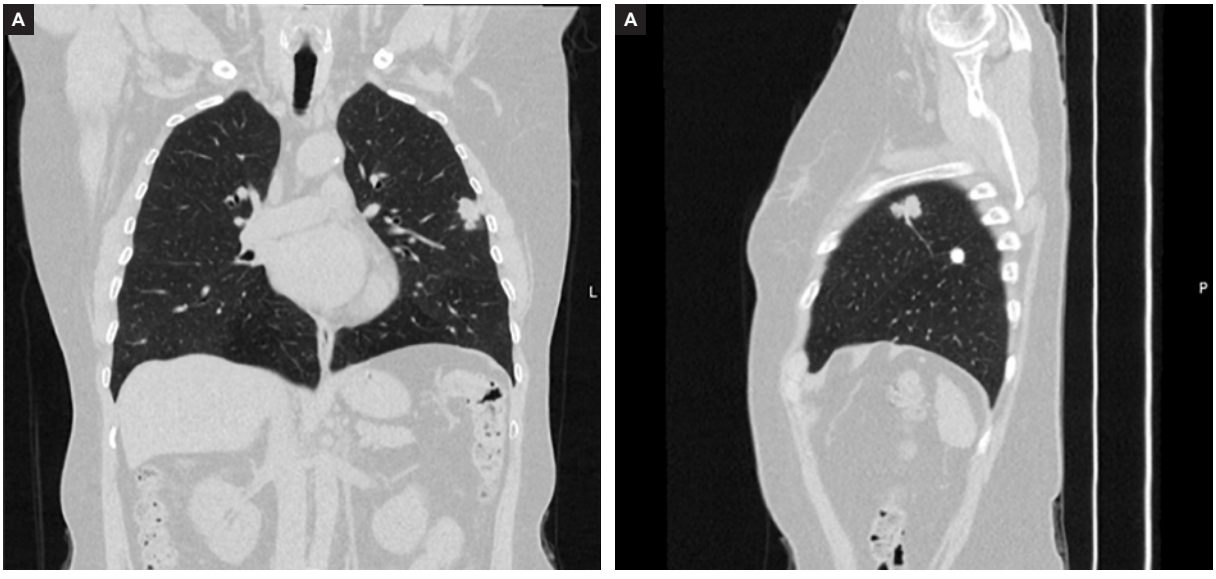
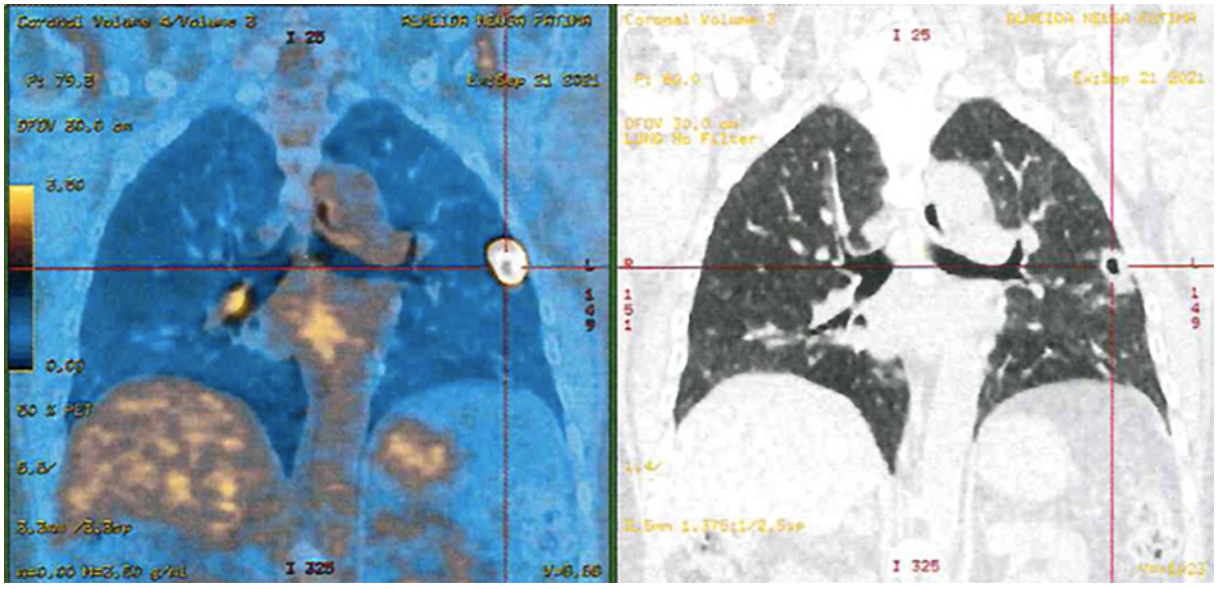


Figure 2. PET/CT showing a hypermetabolic nodular formation, subpleural, with central necrosis.

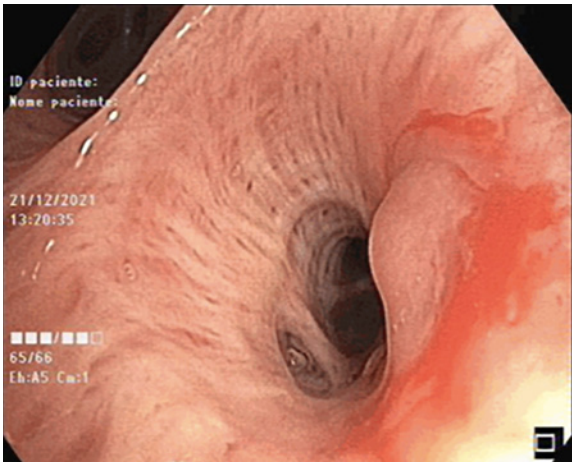


hilum as well as stability of the nodule in the left lower lobe.

PET/CT showed hypermetabolism in the lateral aspect of the left upper lobe, with SUVmax 12,3 and the nodule in lower left lobe showed only a tenuous uptake, with a SUVmax of 1,2. A micronodule in the superior segment of the right lower lobe, with no significant uptake was noted, albeit its small dimension couldn't allow a reliable metabolic evaluation. Regarding lymph nodes, increased uptake was noted in the right hilar region with a SUVmax of 4,2, in the aortopulmonary window, with a SUVmax of 2,6, as well as bellow the left main bronchus, also with a low uptake (SUVmax 3,2).

A CT-guided percutaneous transthoracic needle biopsy was performed directed to the subpleural nodule in the left upper lobe, which was consistent with an invasive squamous cell carcinoma of the lung.

Figure 3. Bronchofibroscopy showing a friable polypoid lesion in the distal end of the bronchus intermedius, obliterating the emergency of RB6.



An EBUS was performed for mediastinum staging, which surprisingly revealed a polypoid lesion in the distal extremity of the bronchus in-

termedius, obliterating the emergency of the apical segment, RB6, which was biopsied and compatible with a low differentiated carcinoma. Stations 4L (4,9x6,8mm), 11L (6,7x12,3mm) and 11R (8,2x10x5mm) were punctioned, with positive cytology for carcinoma in the station 11R.

A right lower lobectomy was first performed and an endobronchial lesion with 1,6 cm was identified and compatible with a low differentiated carcinoma, with a solid pattern and areas with squamous differentiation, with no pleural invasion and margins R0. Lymph node dissection was performed, with stations 4R, 7, 9 and 10 with no visible carcinoma.

The patient was subsequently submitted to an atypical resection of the left upper lobe, removing the lesion that was compatible with a keratinizing squamous carcinoma, with extensive central necrosis, invading the visceral pleura, with clear surgical margins. Station 5 was also removed, showing no carcinoma tissue. An atypical resection was also performed to the lesion in the left lower lobe that confirmed no carcinoma tissue.

Two synchronous tumors were assumed in the multidisciplinary team meeting, with a squamous carcinoma cell of the left upper lobe, T1bN0M0, and a low differentiated carcinoma of the right lower lobe, pT1bN1M0, with areas of squamous differentiation, both negative for PD-L1. As to date, the patient is expected to start adjuvant chemotherapy given the staging of the right-side tumor.

DISCUSSION

Multiple primary lung cancers pose a variety of clinically important diagnostic and therapeutic problems.[7] In some patients it can be difficult to establish the diagnosis of an additional primary *versus* metastases. In daily clinical practice, it is important to recognize and discuss these situations in multidisciplinary meetings, due to the implications on subsequent therapeutic management strategies.

This case demonstrates the importance of screening and follow-up programs in high risk patients, as well as the importance of smoking cessation and that with the improvement in diagnostic procedures, cancer can be detected more promptly and efficiently allowing for a better prognosis.

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