

Synchronous Pulmonary Adenocarcinoma and Mediastinal Non Hodgkin Lymphoma

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Abstract

In the present report we're going to describe a rare case of synchronous lung adenocarcinoma and non-Hodgkin B-cell lymphoma in both hilar and mediastinal lymph nodes. The primitive pulmonary epithelial neoplasm was effectively managed with a right upper lobectomy and an adjuvant chemotherapy, while the indolent lymphoproliferative disorder did not require any treatment. The 24-month follow up did not show relapses.

Keywords: Synchronous multiple primary neoplasms; Solid neoplasmas; Hematologic neoplasms

Introduction

The simultaneous occurrence of lung cancer without mediastinal lymphadenopathies and malignant lymphoma involving intrathoracic lymph nodes, to the best of our knowledge has never been previously reported in literature.

The incidence of synchronous multiple primary cancer (SMPC) is very low, and it's even less common to observe concomitant solid tumors with hematological malignancies [1].

In the present paper we aim to describe an unusual case of simultaneously diagnosed pulmonary adenocarcinoma and non Hodgkin lymphocytic lymphoma involving hilar and mediastinal lymph nodes.

Case Presentation

A 59-year-old man, in good general health, former smoker with no significant medical history, was admitted to our department with dry tickly cough, progressive exertional dyspnea and right chest pain arising in the past two months; physical examination was not remarkable. A chest radiograph (Figure 1A) disclosed a gross opacity in the right hilar angle, confirmed by a computed tomography scan, that showed a spiculated para-mediastinal mass in the right upper lobe (7×5 cm), with pericentimetric hilar and mediastinal lymph nodes enlargement (Figures 1B and 1C).

An integrated ¹⁸F-FDG-Positron Emission Tomography - Computed Tomography (PET/TC) scan revealed an increased radiopharmaceutical uptake within the pulmonary mass (SUV range: 5.2 - 13.4) and in a homolateral hilar lymph nodes (SUV: 3.4) (Figure 1C).

A flexible fiberoptic bronchoscopy showed a nearly complete endobronchial obstruction of the anterior branch (B3) of the right upper bronchus by a smooth vegetation blocking the ostium; endobronchial biopsies allowed a diagnosis of pulmonary adenocarcinoma.

A right upper lobectomy with radical lymphadenectomy was undertaken through an anterolateral muscle-sparing thoracotomy; the post-operative course was uneventful and the patient was discharged on the 5th postoperative day.

Immunohistochemical stainings revealed a poorly differentiated,

acinar predominant lung adenocarcinoma, with a TTF-1+/ CK7+ immunophenotype, with a contiguous spread to a peribronchial lymph node (Figures 2A and 2B).

According to the TNM 7th edition, the pathological stage was pT₂, N₁, R₀, M₀, G₃. The molecular analysis didn't detect Epidermal Growth Factor Receptor (EGFR) nor Anaplastic Lymphoma Kinase (ALK) genes mutations.

Surprisingly, while assessing hilar and mediastinal lymph nodes, it was found a non Hodgkin B lymphocytic lymphoma (LLC/SLL), with a growth pattern of small sized elements interspersed with large and intermediate cells (prolymphocytes and immunoblasts), with a CD20+, CD5+, CD23+ immunophenotype (Figures 2C and 2D).

The patient received four cycles of adjuvant chemotherapy for the lung cancer (Cisplatin - Gemcitabine), while the indolent lymphoproliferative disorder did not require any treatment. The 24-month follow up did not show recurrences.

Discussion

Collision tumors represent a very rare entity, most of the times diagnosed at the onset of presentation. The diagnostic criteria for Multiple Primary Cancer (MPC), as defined by Warren and Gates [2], include the following conditions: 1) each neoplasm must show specific malignant findings; 2) each lesion must be separate and distinct in site; 3) the possibility that one neoplasm represent a metastatic focus from the other should be excluded.

Synchronous Multiple Primary Cancer (SMPC) is defined as two or more tumors occurring within six months of each other, while heterochronic multiple primary cancer is a subset of SMPC where the second cancer occurs more than six months after the first one.

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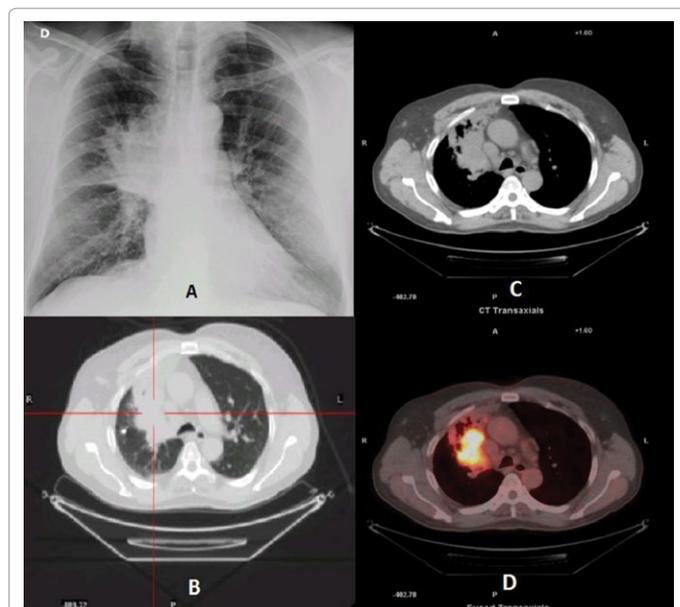


Figure 1: Diagnostic imaging: (A) frontal chest radiograph showing a large homogenous opacity in the upper medial zone near the right hilum; (B) chest CT scan, lung parenchyma window: right upper lobe collapse against the mediastinum, appearing as a right paratracheal opacity; (C) chest CT scan mediastinal window showing a bulge in the contour of the collapsed right upper lobe secondary to the endobronchial tumor and lymphadenopathies of the Baretz space (D) PET-CT scan, screen captures showing a 18-FDG avid lesion in the right upper lobe and hilar lymphadenopathies.

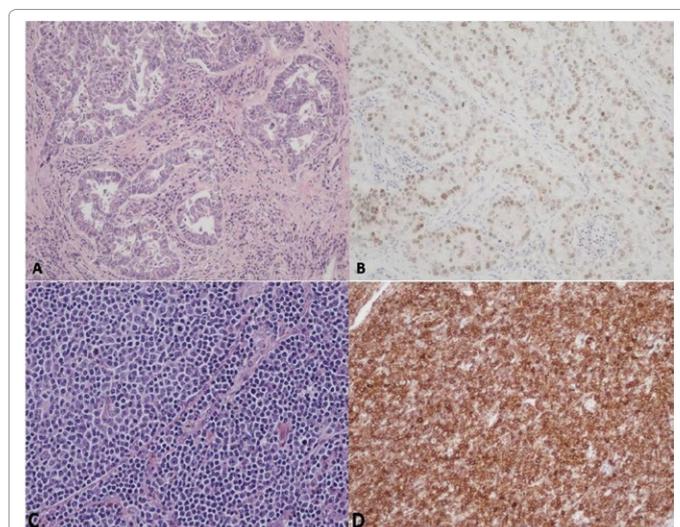


Figure 2: Adenocarcinoma: (A) neoplastic glands proliferation surrounded by desmoplastic stroma (hematoxylin-eosin); (B) nuclear positive immunoreactivity for TTF-1. Lymphomatous proliferation: (C) diffuse growth pattern of small sized elements (in the lower right-hand corner) interspersed with large polymorphous cells and paraimmunoblasts in the upper left; (D): diffuse CD 20 positivity.

The incidence of synchronous epithelial tumors with hematological malignancies is very uncommon, and its etiology and pathophysiology remains still unclear [3,4].

Low grade lymphoproliferative diseases like chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL/SLL) have been demonstrated to be frequent components of multiple primary malignant tumors, just as squamous cell carcinoma and adenocarcinoma have

been reported as the most common non hematopoietic components [5]. Otherwise, in SLL/CLL patients has been observed an overall increase in the incidence of second cancers: a large retrospective study by Schollkopf et al., showed a statistically significant increase in the relative risk for lung cancer [6]. Sometimes such a combination of tumors presents several challenges in terms of management options and the therapeutic approach to each neoplasm requires separate considerations of their biologic behavior [7].

In the present case, after an accurate staging of both the neoplasms, it was suggested a strict hematologic follow up, but no immediate cure of the lymphocytic lymphoma was undertaken, yet the patient was submitted to an adjuvant systemic treatment for the resected lung cancer, with successful therapeutic outcomes.

Conclusions

The precise mechanism of synchronous multiple primary cancer remains unknown and there are no uniform treatment guidelines, so that the management may be challenging; nevertheless, the prognosis of SMPC patients may be good if the tumors are all at early stage, as in the present case.

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