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Progressive dyspnea due to pulmonary carcinoid tumorlets

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ABSTRACT

This is a case description of a female patient, 77 years-old, who presented with progressive dyspnea and cough. She had a mild hypoxemia in the arterial blood gases (PaO_2 72 mmHg) and normal spirometry. The chest computer tomography revealed diffuse "ground glass" opacities, segmental alveolitis, bronchiectasis, fibrotic lesions and numerous micronodules. A thoracoscopy was performed and the obtained biopsy showed carcinoid tumorlets, with positive CK8/18, CD56, TTF-1 and synaptophysin immunohistochemical markers. Pulmonary carcinoid tumorlets are rare, benign lesions and individuals with tumorlets are typically asymptomatic. Our report presents a symptomatic clinical case of carcinoid tumorlet.

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1. Introduction

Pulmonary Carcinoid tumorlets (PCTs) are nests of hyperplastic, neuroendocrine cells that extend beyond the basement membrane [1]. The diameter of nests differentiates tumorlets (<5 mm) from carcinoids (≥5 mm) [2]. They manifest as nodules in chest computer tomography (CT) [3]. Often coexist with other lung diseases, like fibrosis and bronchiectasis [4]. Literature suggests hypoxia, fibrosing process or genetic factors as underlying pathophysiological mechanisms.

1.1. Case history

A 77 years-old female presented in our Division of Pulmonology in the Department of Clinical Therapeutics of the National and Kapodistrian University of Athens School of Medicine, in Alexandra Hospital of Athens, Greece, with progressive dyspnea during the last month and non-productive cough. The woman suffered from hypertension, dementia, and gastric ulcer, under treatment with olmesartan, metoprolol, levodopa, rivastigmine, and omeprazole, respectively. She had not known previous pulmonary medical history. The auscultation revealed expiratory wheezing, with no other pathological signs. Arterial blood gases on room air proved a mild hypoxemia (pH 7,43, PaO_2 72 mmHg, $PaCO_2$ 36 mmHg, HCO_3-22 mmol/lt). Her spirometry was normal. A chest x-ray showed reticular opacities with small nodules. High resolution chest CT revealed alveolitis and "ground glass" opacities to the right lower lobe, fibrotic lesions and bronchiectasis to the left and right lower lobe and numerous micronodules, mainly centrilobular, scattered in both lungs, without mediastinal lymph nodes and without pericardial or pleural effusions (Fig. 1).

The patient was referred for medical thoracoscopy. Biopsy revealed a nodule, 4,1 mm, from cells arranged in nests and cords, without mitotic activity and necrosis. The remaining lung tissue had lesions of emphysema and fibrosis. Immunohistochemical markers were positive for CK8/18, CD56, TTF-1 and synaptophysin. Levels of Ki-67 were <1%. The diagnosis was pulmonary carcinoid tumorlet.

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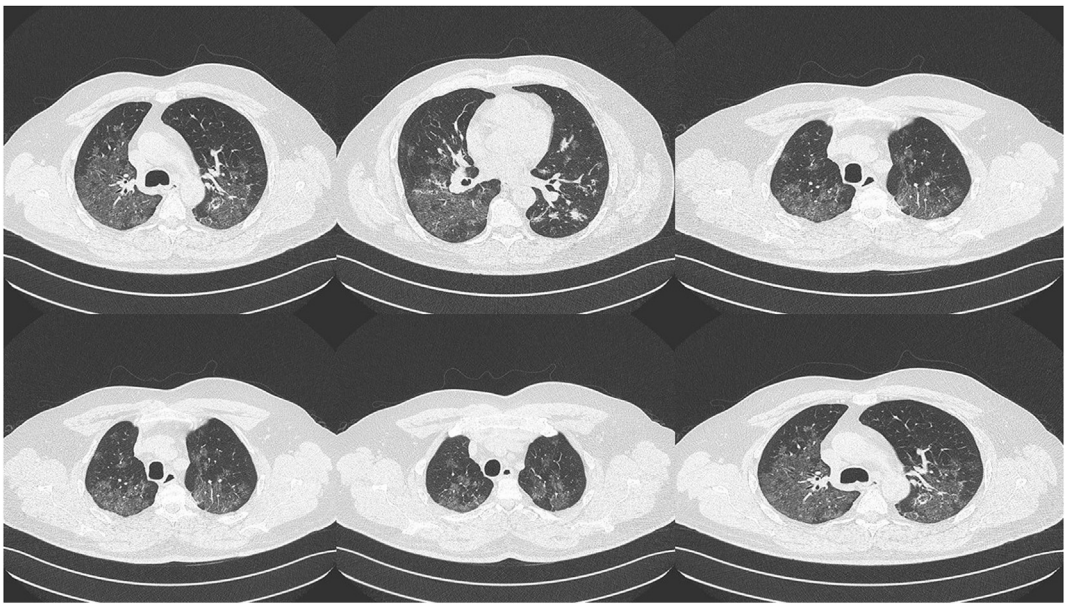

Fig. 1. CT scan of the thorax upon admission.

2. Discussion

Pulmonary Carcinoid tumorlets (PCTs) are rare, benign and usually constitute incidental findings [1]. They arise from focal proliferation of bronchial and bronchiolar neuroendocrine Kultschitsky cells, which exceed basement membrane. They often coexist with diffuse bronchiectasis, emphysema and interstitial fibrosis.

Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia (DIPNECH), tumorlets, and carcinoids are distinct entities that share a common initial event, the neuroendocrine cell proliferation [3]. PCTs and carcinoids have identical histologic findings and the diameter of the lesion is currently the only criterion discriminating them: <5 mm and ≥5 mm, respectively. Some carcinoids develop in patients with DIPNECH and multiple carcinoid tumorlets [5]. According to different studies the hyperplasia of pulmonary neuroendocrine cells can be an adaptive response to hypoxia, or a secondary process associated with pulmonary fibrosis, or a genetic predisposition [1,3,5].

Women, between 60 and 70 years old, are affected more than men (male to female ratio (1:>4)) [3]. Patients with tumorlets are typically asymptomatic. In a previous case report a carcinoid tumorlet in pulmonary sequestration with bronchiectasis was diagnosed during regular reexamination with x-ray, after breast cancer [6,7]. In another case report both tumorlet and adenocarcinoma were detected in the right upper lobe of a patient without symptoms or underlying lung disease [8]. Our patient claimed dyspnea and cough during the last month.

In a series of 294 patients with multiple carcinoid tumorlets clinical symptoms and significant airflow limitation were rare. Long-term survival was excellent, although patients had persistent disease [9]. No suggested therapies are described.

We describe this case report in order to highlight that tumorlets should be included in the differential diagnosis when a patient complain of dyspnea and small nodules are identified in the chest computer tomography. We should keep in mind that PET-CT is not the best method to diagnose this entity, however; targeted therapy with octreotide or 18F-DOPA amino acid analog can be used [10].

Conflict of interest

None to declare.

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