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Case Report

A Rare Case of Malignant Lung Cancer in a 20-Year-Old Patient: Possible Diagnostic Pitfalls

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ABSTRACT

We present a case of a 20-year-old male with a rare form of malignant lung cancer. The patient had a long history of respiratory symptoms that have been repeatedly treated as a pulmonary infection. Despite several hints of the ineffectiveness of the therapy, the diagnosis and definitive surgical treatment were made 4 months after the onset of symptoms. Our aim is to highlight the importance of an efficient diagnostic process within multidisciplinary discussion and to warn clinicians on potential pitfalls related to unusual clinical presentation.

Introduction

Lung cancer is the leading cause of cancer-related death worldwide with a median age at diagnosis of 70 years. Most common symptoms, as cough, fatigue and dyspnea, are non-specific and tend to present quite lately during the course of the disease. Usually, clinicians suspect lung cancer in symptomatic patients with risk factors; instrumental evaluation starts with a chest X-ray and continues until suspicion remains. Ultimately, in the absence of a screening program, malignant lung cancers are not diagnosed until a later stage, in most cases.

In case of young adults with respiratory symptoms, malignancy is not included precociously in the differential diagnosis, being these patients usually fit and without risk factors. However, some rare cancer subtypes can target this specific population and knowing and taking into consideration this possibility is mandatory to avoid misdiagnosis. A multidisciplinary discussion has shown to play a fundamental role in the diagnosis and treatment of lung cancer to achieve the best results in terms of quality of care and prognosis [1]. For young patients, expert evaluation is even more important, but rather barely common. Our aim is to highlight this concept with the description of a case of a young patient with a rare form of lung cancer presenting with clinical features of pulmonary infection. The diagnostic pathway showed some flaws due to the uncommon disease characteristics.

Case Report

A 20-year-old male, without relevant past medical history, was evaluated in a peripheral hospital for the onset of fever, myalgia, headache and dry cough. Empiric antibiotic therapy was administered with no benefits. After further evaluation, sputum culture and a second course of antibiotics, the patient underwent CT scan and bronchoscopy. A diagnosis of middle lobe pneumonia with bronchial glands hypertrophy was made, due to the finding of "Mucosal thickening of the middle lobe bronchus". Despite the treatment, there was no complete resolution of the symptoms and a tertiary center evaluation was sought. The case was discussed before a multidisciplinary tumor board and a repeated bronchoscopy was indicated. It showed an endobronchial mass obstructing the lateral segment of the middle lobe (Figure 1). Pathological examination of bronchial biopsy showed the presence of mucoepidermoid carcinoma. Respiratory function tests and PET-CT were then performed, and a minimally invasive middle lobectomy with

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radical lymphadenectomy was performed. The postoperative course was uneventful, and the patient was discharged home after 3 days. Final pathologic diagnosis confirmed the presence of mucoepidermoid carcinoma, staged as pT1, pN0, R0. Despite the macroscopic growth of the tumor, resection was achieved with curative intent, and no further treatments were proposed.

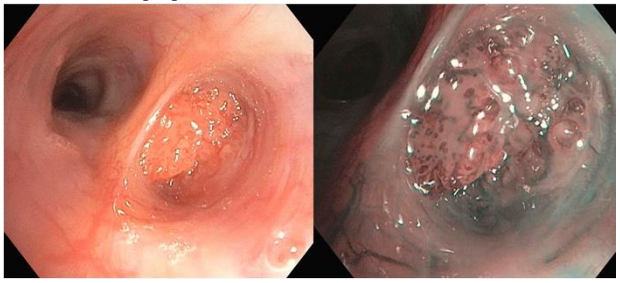

Figure 1: Lateral segment of middle lobe bronchus completely obstructed by a solid mass.

Discussion

Mucoepidermoid carcinoma of the lung is a rare form of non-small cell lung carcinoma, first described in 1952 by Smetana *et al.*, accounting for less than 1% of all lung cancer histotypes [2]. The majority are low-grade and have an excellent prognosis, but there is also a high-grade sub-type which behaves as other malignant carcinoma of the lung.

It is a salivary gland-type tumor originating from the epithelium of the central airway, occasionally presenting in the lung periphery. It affects all ages, but it is more common before the age of 30 (50% of the patients are less than 30 years old) [3]. It can present with cough, hemoptysis, chest pain, or obstructive pneumonia (Figure 2) [4]. Low-grade tumors have an indolent behaviour, whereas the high-grade ones are more often characterized by lymph node and distant metastasis [5]. The treatment of choice is surgical resection, which has been associated with long-term survival. Adjuvant systemic therapy is recommended only for high-grade tumors, but its usefulness is controversial [3, 4]. EGFR-targeted therapy in high-grade carcinomas has been used for inoperable disease, even in the absence of EGFR driving mutation [6].

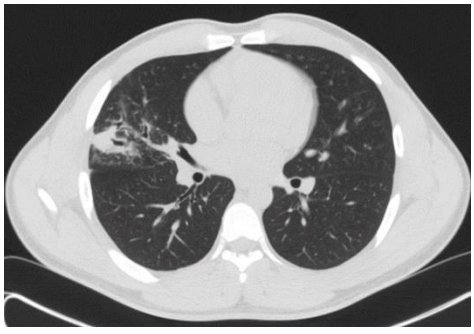

Figure 2: CT scan showing post-obstructive pneumonia.

The prognosis of low-grade mucoepidermoid carcinoma is excellent (five-year survival rate at almost 95%). However, high-grade carcinoma develops metastasis in about 25% of cases. Two of the main prognostic factors are the presence of lymph node metastasis and surgical resection margins [4]. For this reason, prompt diagnosis is important for planning the optimal therapeutic strategy.

In our patient, the interval from the onset of the symptoms and the surgery was 4 months. During that time, the lesion showed a significant growth that could have impaired the radicality of the resection. Possibly, the rarity of the disease, the lack of expertise and multidisciplinary meeting in the peripheral hospital led to such a delay. Also, the misdiagnosis on bronchoscopy could have been caused by inexperience. Retrospective evaluation of the pictures obtained during the first bronchoscopy revealed that the tumor was already present in the form of an infiltrative lesion of the segmental bronchus mucosa. Of course, with the knowledge given by the retrospective analysis of the findings, all these reflections must be considered purely speculative. Nonetheless, critical examination of possible pitfalls is part of the quality control and improvement process.

Conclusion

Lung cancers in young adults are rare but potentially aggressive. Suspicion of underline disease should rise in cases of persistent respiratory symptoms and instrumental examination such as CT scan and bronchoscopy should be performed and interpreted critically. Multidisciplinary expert counselling should be sought in case of unusual diseases.

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