

Lymph Node Lesion in a Patient with Bronchial Cancer and Tuberculosis: is it a Metastasis or Lymph Node Tuberculosis?

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Abstract

Case Report

Despite the progress and advancements made in the management of bronchial cancer, the prognosis is quite reserved, especially in the terminal stages, and in the case of certain comorbidities, such as tuberculosis, which is still present in our country. The problem with this situation lies in the diagnostic phase, and sometimes at the therapeutic stage. Case report: we describe the case of a hypertensive patient, recently diagnosed with bronchial cancer and lymph node tuberculosis. One month after the beginning of anti-tuberculosis treatment, mediastinal lymph nodes showed increased metabolism on the 18F-FDG PET scan, while other lymph nodes disappeared. The staging of the cancer as well as the therapeutic strategy became difficult, especially since bronchial endoscopic ultrasound is not part of our usual practice. Conclusion: The complexity of diagnosis in patients with lung cancer associated with tuberculosis delays treatment, and consequently, the prognosis could become more unfavorable.

Keywords: Tuberculosis, mediastinal lymph node, bronchial cancer, diagnosis, surgery.

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INTRODUCTION

Lung cancer is the leading cause of cancer mortality worldwide, with approximately 2 million diagnoses and 1.8 million deaths. With increasing access to tobacco and the industrialization of developing countries, the incidence of lung cancer is rising worldwide. It affects 2 men for every woman, which largely reflects the differences in tobacco consumption [1]. The management of lung cancer is multidisciplinary, involving thoracic surgeons, oncologists, and radiotherapists [2]. The therapeutic approach depends on several criteria, including the histological type, the mutational profile, the tumor size and its resectability, lymph node involvement, distant spread, the patient's condition, and others [3].

The therapeutic decision is sometimes simple, sometimes difficult, requiring medical teams; particularly in cases of certain comorbidities, such as tuberculosis. We report the case of a patient in whom we diagnosed, during the same hospitalization, a pulmonary adenocarcinoma and thoracic lymph node tuberculosis. The latter complicated the staging of the cancer and thus the therapeutic path.

CLINICAL OBSERVATION

This is a 70-year-old female patient who has been treated for high blood pressure with amlodipine for 15 years. In October 2024, the patient began to feel short of breath after any significant effort and to have a hoarse voice, which prompted her to consult a pulmonologist. The pulmonologist ordered a cervical-thoracic CT scan, which revealed an imprint on the anterior part of the left vocal cord consistent with paralysis. In addition, a round, dense nodule with spiculated contours measuring 18 x 13 mm was identified at the apex of the left upper lobe, with multiple calcified mediastinal hilar lymph nodes.

A bronchial fibroscopy was performed but was inconclusive, as the patient was uncooperative. We supplemented this with an 18 F-FDG PET scan, which revealed a highly suspicious 15 x 13 mm pathological hypermetabolic pulmonary nodule in the left apical region, with several suspicious pathological hypermetabolic mediastinal, right supraclavicular, and abdominal lymph nodes. The right hemilarynx showed hypermetabolism related to paralysis of the left vocal cord.

We performed a biopsy of the right subclavian lymph node; the results were as follows: granulomatous lymphadenitis with signs of caseous necrosis consistent with a tuberculous origin.

Based on this information (and after requesting the necessary tests), the pulmonologist decided to prescribe anti-bacillary drugs: ERIP-K4. A week later, the patient underwent a CT-guided biopsy of the pulmonary nodule: the morphological appearance and immunohistochemical profile were consistent with a broncho-pulmonary adenocarcinoma with a lepidic architecture. A second PET scan with 18F-FDG was performed one month after the start of anti-bacillary treatment to reassess the stage of the cancer. Compared

to the previous examination, the left apical pathological hypermetabolic

pulmonary nodule has maintained a stable appearance. But, in the lymph nodes, it was a dissociated metabolic response:- Disappearance of the right supraclavicular lymph node focus. Increase in metabolism of the lymph node focus in the aorto-pulmonary window (SUV max= 10.8 vs 5.4) (figure 1) and left superior para-tracheal (SUV max= 5.4 vs 3.8) (figure 2). - Stable appearance of hypermetabolism in the subcarinal lymph nodes (SUV max=5.3) and paraesophageal lymph nodes (SUV max=5.6). Disappearance of lymph node foci in the right upper mediastinal area. - Disappearance of lymph node lesions in the abdominal region.

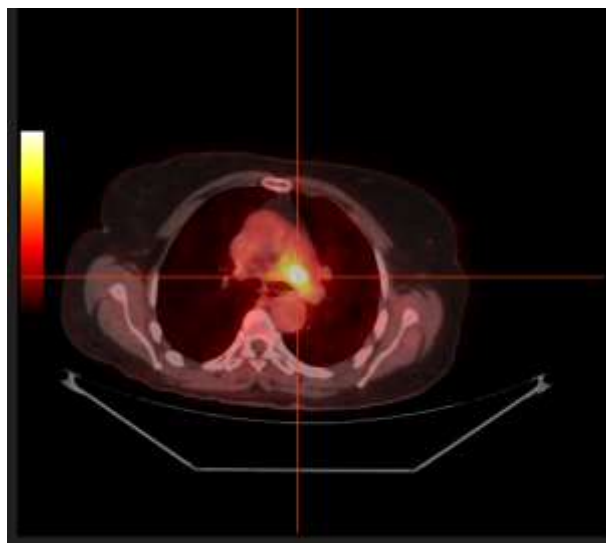


Figure 1: axial section of the PET scan with 18 F_FDG showing hypermetabolism of the lymph node focus in the aorto-pulmonary window

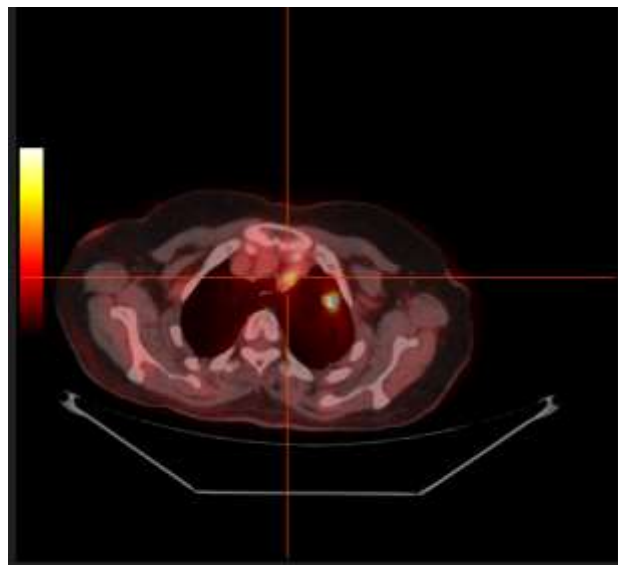


Figure 2 : axial section of the PET with 18 F_FDG showing hypermetabolism of the left upper paratracheal lymph nodes

The lymph nodes that disappeared demonstrate the effectiveness of the anti-tuberculosis treatment.

However, those that increased in hypermetabolism did not allow us to determine whether these nodes were

cancerous or infectious. Thus, we were unable to stage the tumor, and the anti-cancer treatment remained unknown.

The case was presented at a multidisciplinary consultation meeting; the thoracic surgeons proposed operating on the patient: resecting the two lymph nodes that had increased metabolism, with an extemporaneous anatomopathological study.

If the result comes back in favor of tuberculosis, it means there are no tumor nodes, and the surgical procedure will be completed by resection of the primary site.

If the result favors a lymph node metastasis, the surgery could not be complete.

The patient was scheduled for surgery the following week, and the results of the extemporaneous examination indicated a tuberculous inflammation.

Thus, a resection of the primary tumor was performed during the same surgical procedure; The medical file was subsequently staffed to discuss the adjuvant treatment.

DISCUSSION

Morocco has a significant incidence rate of lung cancer. And the highest mortality rates in Africa and the Middle East and North Africa (MENA) region, with 7 353 new cases and 6 551 deaths in 2020 [4]. The incidence of tuberculosis in the Moroccan population is not too low; Morocco reported over 35000 cases of tuberculosis and 2 974 deaths in 2019 [5], and it still represents a public health problem.

Thus, the risk of developing lung cancer in a patient with tuberculosis, or the diagnosis of pulmonary or extrapulmonary tuberculosis in a patient undergoing treatment for bronchial cancer, remains possible in our context. The pathophysiology of the concomitant occurrence of these two diseases is not clearly defined, as the cases described in the literature are rare [6].

However, we can proceed from this hypothesis:

- Chemotherapy indicated in the case of lung cancer promotes immunosuppression, and therefore the occurrence of infections, particularly tuberculosis.
- Conversely, tuberculosis is involved in pulmonary carcinogenesis [7]; The inflammation caused by tuberculous infection induces the activation of various cytokines (tumor necrosis factor, IL-1, and IL-6), as well as reactive oxygen species (ROS), which can bind to DNA, leading to genomic alterations [8, 9].

The symptoms in the case of pulmonary or lymphatic tuberculosis are almost similar to those

observed in bronchial cancer: cough, hemoptysis, chest pain, dyspnea, lymphadenopathy with or without fistulization, and general condition deterioration (apart from night sweats, fever, and the epidemiological context) [10]. Therefore, it is difficult to consider both diseases at the same time. It is the paraclinical examination that makes the difference; the thoracic CT scan aids in diagnosis, and the pathological study confirms whether it is malignant, infectious, or a combination of both. According to the literature, the diagnosis of tuberculosis, lung cancer, or the coexistence of both presents challenges, as one is the differential diagnosis of the other [11,12].

In certain situations, the diagnosis is complicated when lesions are inaccessible to biopsy, or in cases of multiple lesions that cannot all be confirmed histologically. Bronchial endoscopic ultrasound has proven its great value as a minimally invasive technique used for the diagnosis and staging of bronchial cancer [13]. The specificity of the PET-CT scan is insufficient (78%) to skip the biopsy of a suspicious lesion. To investigate a mediastinal lymphadenopathy and recognize its tumor or infectious nature, ultrasound-guided fine needle aspiration (EBUS-TBNA) is a recent advancement that has proven its worth. It can be a valid alternative to mediastinoscopy [14].

The management phase is also subject to constraints.

- Immunosuppression due to cancer treatment delays the start of anti-bacillary drugs and can worsen tuberculous lesions.
- Acute forms of tuberculosis hinder the start of chemotherapy.

The prognosis for this dual disease depends alternately on the cancer and the Koch bacillus. It is strictly related to cancer if the latter is at an advanced or complicated stage (pulmonary embolism, hemorrhage, respiratory distress, febrile neutropenia, etc.). But it can also depend on tuberculosis, especially if the infection is disseminated, if the diagnosis is late, or if the patient has multiple comorbidities. In any case, the prognosis is poor, since the diagnosis is generally late [15,16].

CONCLUSION

The combination of tuberculosis and lung cancer is quite common in countries that are still facing tuberculosis. The history of tuberculosis in Morocco leads us to consider its association with lung cancer, especially in the presence of clinical or paraclinical signs of this infection. This cancer-infection conjunction is accompanied by a long diagnostic and therapeutic journey, sometimes complex, requiring step-by-step determinations.

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