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Cardiac Mass Revealing an Infiltrating Bronchogenic Carcinoma Reaching the Controlateral Upper Lobe: A Case Report

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ABSTRACT: A malignant tumor can invade all organs of the body by different ways, cardiac metastases of bronchial origin are generally less frequent, and there are few cases in the literature. We report a case of an intra-cardiac tumor revealing a bronchial carcinoma. We report the case of a 64-year-old man who was a smoker at 40PA. He presented with a 3 months evolving symptomatology made of dyspnea associated to a productive cough with whitish sputum sometimes streaked with blood. The patient also complained of a retrosternal pain irradiating to the interscapular region. The patient was apyretic but presented anorexia and weight loss. On physical examination, the patient had a tachycardia at 100 beats per minute, a right basal fluid effusion syndrome, with a WHO performance status at 1.The electrocardiogram showed sinus tachycardia at 100 bpm with the presence of some ventricular extrasystoles. The cardiac echocardiography showed a hypoechoic mass in the left atrium attached to the upper wall, The thoracic CT scan showed a locally invasive heterogeneous tumor, localized in the right lower pulmonary lobe and the mediastinum with intracardiac extension to the left atrium. The bronchoscopy showed a friable whitish tumor bud obstructing the right stump bronchus bleeding on contact, with another bud obstructing the segmental bronchus of the left upper lobar bronchus bleeding easily on contact, biopsies of the bud and aspirations for cytodiagnosis were performed.

Keywords: Cardiac mass, lung cancer, case report, bronchoscopy.

CASE REPORT

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INTRODUCTION

The clinical presentation of bronchial carcinoma can sometimes lead to a diagnosis problem, a delay in diagnosis or even a misdiagnosis. This can be caused by the multiple clinical manifestations of lung cancer as well as the fact that it can even be asymptomatic. Revelation is also possible by symptoms due to the invasion of other organs. Direct cardiac invasion by a bronchogenic carcinoma is rare, only 8-10% of all lung cancers show invasion of the heart [1]. This case report is an example of a bronchogenic cancer revealed by a cardiac extension of the tumor.

CASE REPORT

We report the case of a 64-year-old man, smoker at 40PA. He has been treated for hypertension for 5 years under amlodipine and had no other medical history.

He presented a symptomatology evolving for 3 months, made of a dyspnea initially stage 2 of Sadoul becoming progressively stage 4, associated with a cough bringing back whitish sputum sometimes streaked with blood, a retrosternal thoracic pain of moderate intensity irradiating in interscapular, in a context of apyrexia and alteration of the general state made of asthenia, anorexia and unquantified emaciation.

At the clinical examination, the patient was conscious, apyretic at 37.1, eupneic at 20 cycles per minute, tachycardic at 100 beats per minute, he had a peripheral saturation to the ambient air at 96%, he had a right basal pleural effusion syndrome, with a performance status of WHO at 1.

The electrocardiogram showed sinus tachycardia at 100 bpm with the presence of some ventricular extrasystoles, the cardiac echocardiography showed a hypoechoic mass in the left atrium attached to the upper wall measuring 54x41 mm, pulmonary hypertension with PAPS of 65 mmgh (figure1).

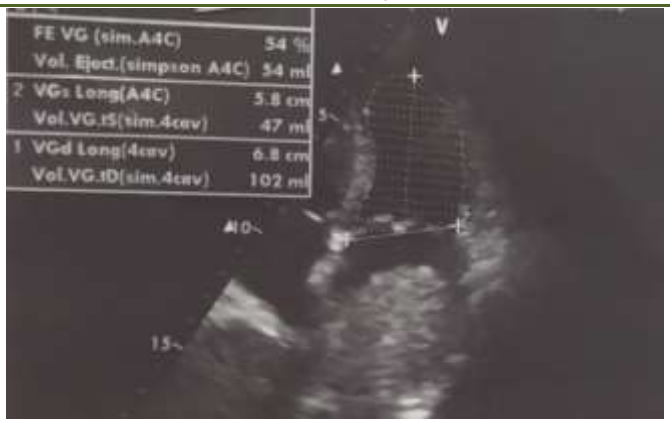

Fig-1: The cardiac echocardiography showed a hypoechoic mass in the left atrium

The thoracic CT (figure 2) scan showed a locally invasive, heterogeneous, dense tissue realizing a right lower mediastinal tumor measuring 15x12x7cm, associated to carcinomatous lamphyngitis. It also showed an intracardiac extension to the left atrium reducing its volume, 1cm away from the mitral annulus. It invades the left pulmonary artery and its inferior lobar branch; it bulges into the left stem bronchus and encompasses its inferior lobar branch and segmental bronchi. This tumor compresses the inferior vena cava and the superior pulmonary veins; it rests on the diaphragm, and responds to the hepatic dome with loss of the dividing line associated to a right pleural effusion of medium abundance, a pericardial effusion, mediastinal adenomeglies and bilateral emphysema.

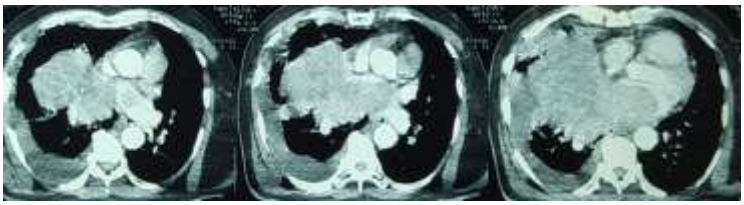

Fig-2: Axial thoracic CT scan showing the tumor infiltrating the heart

The pleural fluid was serohematic, with protids at 42, and a predominantly lymphocytic cytology. On bronchoscopy: the mucosa of the oropharynx was hypertrophied bleeding easily on contact. It found a friable whitish tumor bud obstructing the right stump bronchus bleeding on contact, with another bud obstructing the segmental bronchus of the right upper lobar bronchus bleeding easily on contact, biopsies of the bud and aspirations for cytodiagnosis were taken (figure 3).

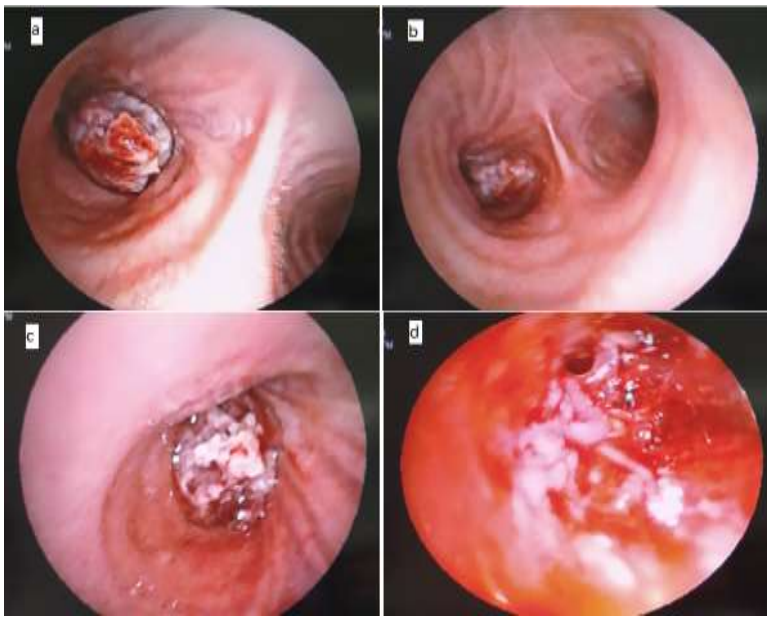

Fig-3: Endoscopic view of the tumor in the right main bronchus (a,b,c) and the right upper lobar bronchus (d)

The pathological study showed a sheet-like tumor proliferation, made of medium to large tumor cells; they have an enlarged nucleus, sometimes nucleolated, with abnormal mitoses, the cytoplasm is abundant, eosinophilic and jointed; it's a non-small cell not very differentiated carcinoma. The cytodiagnosis showed the presence of malignant cells.

DISCUSSION

Heart metastases are among the least known tumors and few systematic studies are devoted to this topic. Although primary cardiac tumours are extremely uncommon (various postmortem studies report rates between 0.001% and 0.28%), secondary tumors are not, at least in theory, the heart can be metastasised by any malignant neoplasm able to spread to distant sites. In general, cardiac metastases are considered to be rare; however, the incidence seems to be not as low as expected, ranging from 2.3% and 18.3% [1].

Metastases of the heart occur in 1.5–21% of all malignant tumours [2]. Lung cancers are most common primary malignant tumours which metastasize to heart. Other malignancies causing cardiac metastasis are melanoma, lymphoma, breast cancer, leukemia, and stomach cancer [1, 3].

Lung tumors can spread to the heart through hematogenous dissemination, the lymphatic system, direct invasion, and by intracavitary diffusion via the inferior vena cava or pulmonary veins. Lung tumors spread to the heart most commonly via thelymphatic system rather than through the pulmonary veins. The entry of lung tumors into left atrium via the pulmonary vein is uncommon [4].

Although it is assumed that the right side of the heart is more frequently involved than the left by hematogenous dissemination, there are numerous cases where left-sided involvement is found, in most cases, diffuse bilateral spread is found. In descending order of frequency, pericardium, myocardium and endocardium are involved [3]. Left atrium is anatomically a contiguous structure of the lung hilum via pulmonary veins, and it explains why it is most commonly involved compared with right atrium and both ventricles by direct invasion of central lung tumours [5]. Pericardial invasion results in hemorrhagic or straw-colored pericardial effusion or constrictive pericarditis. Myocardial invasion results in myocardial ischemia and angina pectoris, brady- or tachyarrhythmias and congestive cardiac failure [6]. In our case, retrosternal oppressive chest pain was probably due to myocardial ischemia caused by compression of posterior wall of heart by the lung mass. Lung mass itself may be an additional factor for development of dull aching chest pain.

Electrocardiographic recordings are usually unspecific but may document possible ventricular or supraventricular arrhythmias, or conduction defects. Pericardial effusion can cause low voltage and electrical alternans, Q-waves can occur as residues of tumor-related myocardial infarction; an electrocardiographic picture of infarction can also result from infiltration or displacement of myocardium by the tumor. Chest radiography may reveal an increase in cardiac silhouette through pericardial effusion or peri- and/or paracardial tumor growth, as well as a pleural effusion resulting from heart failure or a lung tumor [3, 6]. The method of choice to detect cardiac metastases and their complications, however, is two-dimensional echocardiography [3]. CECT thorax or magnetic resonance imaging (MRI) of mediastinum distinctly delineates the morphological appearance and the degree of infltration into heart by juxtacardiac lung tumour [7].

The differential diagnosis of intracavitary mass lesions includes benign and malignant primary cardiac tumors. Since an intracardiac lesion is detected by ultrasound, the differential diagnosis must include thrombus, vegetation and a foreign body. However, intracardiac metastases, even though rare, should also be included in the differential diagnosis [3].

In most of the cases, cardiac metastases are seen in advanced lung cancer with or without distant metastases. Treatment of cardiac invasion by lung cancer is palliative; chemo- or radiotherapy is the main treatment options [3, 6]. In our case, there was no option for surgical resection, because the disease was at an advanced stage. Surgical resection is only indicated in exceptional cases of solitary intracavitary heart metastases, leading to obliteration of cardiac chambers or valve obstruction if the tumor of origin was surgically resected and the patient appears to have a good prognosis [3].

CONCLUSION

Secondary heart tumors usually remain uncommon. However, ultrasound examination of the heart should be performed as soon as any cardiac symptoms are detected. Additional information may be obtained by computer tomography or magnetic resonance imaging. Cardiac involvement does not only have prognostic implications: even if only exceptionally curative therapy may be available, palliative measures may improve the quality of life of affected patients.

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