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Osteolysis of the Carpus as a Presentation of Pancoast's Tumor

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Abstract

Lung cancer is most often located in the right upper lobe and is called a Pancoast tumor. On many occasions, the Pancoast tumor begins with osteomyoarticular manifestations. A 72-year-old white male patient of peasant origin is presented who attends the Guard Corps because for a few weeks an increase in volume has been noted on the back of the right hand accompanied by pain in the absence of trauma. An X-ray of the hand was performed, observing osteolysis of the carpal bones, in the preoperative preparation a chest X-ray was performed where an image of condensation of the upper lobe of the right lung was observed. An excisional biopsy of the carpal lesion was performed, the result of which was metastasis of highly undifferentiated lung adenocarcinoma.

Keywords: Lung cancer, Pancoast tumor, Bone metastasis.

Abbreviation: NSCLC- Non-Small Cell, SCLC- Small Cell.

Introduction

Cancer is a group of diseases that are characterized by the abnormal proliferation of cells, which divide without control and have a high capacity to invade organs, tissues and spread through the blood and lymphatic system. It is currently one of the most serious health problems of humanity, it is among the first as a cause of death in developed and developing countries. The lung is the organ most commonly affected by this pathology. Because its diagnosis is made in advanced stages, it is estimated that in 2030 it will continue to be one of the main causes of death. Lung cancer is one of the most frequent diagnoses worldwide. In Spain, some 20,000 new cases of lung cancer are diagnosed each year, being one of the tumors with the highest incidence and mortality. According to data from the Global Cancer Observatory (Globocan), approximately 190,667 incident cancer cases occur in Mexico each year, of which 7,811 correspond to lung cancer cases. In Cuba in 2019, cancer was the second cause of death with 25,035 deaths. Malignant tumors of the trachea, bronchi and lung were the ones with the highest mortality rates due to cancer, with 5,626 deaths for a rate of 50.1 per 100,000 inhabitants, being 1.3 higher in males than in females [1-6].

As is known, lung cancer is classified into two large groups: Non-Small Cell (NSCLC) (which represents 85% of cases and whose most frequent type currently corresponds to adenocarcinoma), and that of Small Cell (SCLC). These are totally different tumors in terms of behavior, treatment and prognosis. About 70% of patients with NSCLC are diagnosed with advanced disease at the time of diagnosis. Although

not They constitute a histopathological variety, malignant tumors located in the lung apex are called Pancoast Tumor, in honor of the eminent physician who conducted studies on their presentation and treatment [1,4,6].

There are several risk factors that can increase the chances of lung cancer such as tobacco smoke. On many occasions, the Pancoast tumor debuts with osteomyoarticular manifestations and the patient goes first to an orthopedic consultation than to others such as Internal Medicine or Comprehensive General Medicine. Metastatic disease (FS) is the most common malignant entity. In the United States of America each year 1.2 million new cases are diagnosed, of which 50% have invasion of bone structures. On many occasions, the metastasis is the cause of the patient attending the medical consultation and not the primary tumor. A clinical approach and medical thinking are necessary to make an accurate diagnosis of cancer [1,7-9].

Clinical Case

72-year-old white male patient, peasant origin and health history, who spontaneously attends the Orthopedic Guard Corps of the Mártires del 9 de Abril University Hospital in Sagua la Grande province of Villa Clara, Cuba, because for a few weeks An increase in volume is noted in the back of the right hand accompanied by pain without any history of trauma. The following examinations revealed.

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Physical Exam

SOMA: Discrete increase in volume of the back of the hand towards the ulnar side, painful on deep palpation, no collateral circulation or color changes (**Figures 1 and 2**).

Respiratory system: Vesicular murmur preserved in both lung fields and no rales. FR of 22 per minute.

Complementary made:

Hemoglobin (Hb): 12.3 g/dL
Leukogram: $9.3 \times 10^9/L$
Polymorphonuclear: 60%
Lymphocytes: 37%
Eosinophils: 03%
Platelet count: 200,000/mm³
Calcium (Ca): 2.7 mmol/l
Phosphorus (P): 1.6 mmol/l
Alkaline phosphatase: 62 IU/L
Alanine aminotransferase (TGP): 12 IU/L
Aspartate aminotransferase (TGO): 30 IU/L
Electrocardiogram (EKG): Normal

AP and Lateral X-ray of the hand: An osteolytic image of the carpal bones is observed with effacement of the Great and Hook bones and partial involvement of the Pyramidal and the Hamate (**Figure 3**).

Chest X-ray: Image of condensation in the right upper lobe of the lung compatible with a block of pneumonic condensation, TB or Pancoast tumor (**Figure 4**). They are also indicated:
Bacteriological sputum I and II: Negative
Cytological sputum: Negative
BAAR I and II sputum: Negative

It is discussed in conjunction with Medicine and Anesthesiology and it is decided to take to the operating room for regional anesthesia (Phleb-analgesia) to perform excisional biopsy of the hand injury.

Biopsy of hand lesion: Anatomical-pathological report: metastasis of highly undifferentiated lung adenocarcinoma. With this result, Oncology is sent where chemotherapy treatment begins immediately.



Figure 1: AP view of the hand showing a slight increase in the volume of the hand towards the ulnar side.



Figure 2: Side view of the hand where the increase in volume is better seen.



Figure 3: Wrist and forearm X-ray AP and Lateral view showing the osteolytic image involving the carpal bones.



Figure 4: Chest X-ray showing image of condensation in the upper lobe of the right lung.

Discussion

Several authors agree that lung cancer is more frequent in males, and the ages between 61 and 80 are affected. This coincides with the case studied, which is a 72-year-old male patient diagnosed with right lung cancer. In studies carried out in Cuba, it was found that in terms of the topographic location of the lung cancer, it was more frequent in the right lung, mainly in the upper lobe of this same side. The case under study coincided with this topographic location of the tumor, the which is called a Pancoast tumor [10,11].

Although the Pancoast tumor generally manifest clinically as pain in the shoulder and towards the arm, Horner's syndrome (enophthalmos, ptosis, myosis and anhidrosis) and atrophy of the muscles of the hand; in the case described, none of the symptoms were present or any respiratory symptoms. When the patient attended the consultation, he only complained of osteomyoarticular symptoms due to the increase in volume in the back of the right hand accompanied by pain, with no history of trauma in the region. In several reported cases, a warning is given to the fact that patients with Pancoast Tumor mostly attend the Orthopedic consultation first because they generally present with osteomyoarticular manifestations, as happened in this case [1,8].

The radiological signs in Pancoast Tumor are a small and homogeneous shadow at the end of the lung apex accompanied by more or less local destruction of the rib and vertebral infiltration. In the case presented, the chest X-ray showed an image of condensation in the upper lobe of the right lung compatible with Pancoast tumor, without ribs or vertebrae; However, in the right hand lesion, an osteolytic image involving carpal bones corresponding to bone metastasis in the appendicular skeleton is observed, which is not the most frequent found by other authors who affirm that 70% of bone metastases occur in the axial skeleton and only 10% in the appendicular. The types of bone metastases can be according to their radiographic appearance: bone destroying (lytic), bone producing (blastic) and mixed. Lytic lesions are the most common and represent 75%, the above described corresponds to the type of lesion found in the X-ray of the hand of the patient under study [1,9].



At present, adenocarcinoma of the lung is the most common primary lung cancer seen in the United States and in most of the countries of the world. In studies carried out in Cuba and also in Paraguay on the behavior of lung cancer, a higher incidence of non-small cell carcinoma and with a predominance of the histological variety adenocarcinoma. To perform the histological diagnosis of cancer, it is necessary to perform a biopsy of the lesion, as in this case studied, the lung lesion had difficult access while the lesion at the carpal level led to fewer complications, it was decided to perform excisional biopsy of the lesion of the carpus and histological study of the sample after which it was diagnosed as a result: metastasis of highly undifferentiated lung adenocarcinoma, which coincides with what was found in the different studies by other authors. Although it has been described that this type of tumor has a strong association with previous smoking, in our case this antecedent is not collected, so factors such as aging and genetic predisposition could be invoked in the risk factors present in this patient [7,9].

The standard treatment for Pancoast's tumor is induction chemoradiotherapy, followed by surgical resection. In this case, the patient was consulted with Internal Medicine and Oncology and chemotherapy was indicated. The presence of osteomyoarticular symptoms in a patient with X-ray that shows an image suggestive of a lytic lesion should suggest a possible bone metastasis from a distant malignant process and the study should focus on its diagnosis. Pancoast tumor is one of the most common lung adenocarcinomas, and its osteomyoarticular presentation highly possible [12].

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