

## Spontaneous Pneumothorax Revealing a Lung Cancer, Case Report and Literature Review

Yassine Smiti\*, Abdelilah Ghannam, Yousra Benkiran, Brahim El Ahmadi and Zakaria Belkhadir

Mohamed V University, Morocco

\*Corresponding Author: Yassine Smiti, Mohamed V University, Morocco.

Received: October 29, 2019; Published: October 25, 2019

DOI: 10.31080/ecec.2019.03.00191

### Abstract

**Introduction:** Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology, but can sometimes be a pathological indicator.

It requires a fast and adequate care because can engage the prognosis.

**Observation:** We report the case of a young patient who consults for dyspnea with sudden chest pain and for whom CT imaging of the thorax, revealed the presence of a pneumothorax with tumor process at a advanced stage, not known until then.

**Discussion:** Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology, but can sometimes be a pathological indicator.

Spontaneous Pneumothorax associated with malignant lung tumor lesion is relatively rare, with only 0.5 to 3% of pneumothorax found in cancer. It is most often pulmonary metastases of extra-thoracic tumors, less frequently from primary bronchial cancers, and sometimes pulmonary lesions of haematological diseases.

The clinical symptomatology of mesothelioma, revealed by spontaneous pneumothorax, is not specific: chest pain, dyspnea, cough. More unusually, it results in a bilateral spontaneous pneumothorax.

The mechanism producing pneumothorax from lung cancer is not well understood.

The choice of the therapeutic remains controversial, however an etiological treatment must be started as soon as possible. Chest drainage is always indicated. In case of failure or recurrence, chemical pleurodesis and surgery are indicated, sometimes even from the outset.

Surgical treatment of spontaneous pneumothorax is performed by video assisted thoracic surgery by combining resection of bubbles and abrasion.

Extracorporeal membrane oxygenation can give the patient more chances, especially refractive hypoxemia. The prognosis remains reserved. Survival varies according to studies and inclusion criteria. on average, 5-year survival is 2%.

**Conclusion:** Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology.

Neoplastic pathology is one of the etiologies described in the literature.

Thoracic CT scan allows diagnosis.

The treatment remains controversial mainly by thoracic drainage, however etiological treatment should be started as soon as possible. the prognosis remains reserved.

**Keywords:** Spontaneous Pneumothorax; Lung Adenocarcinoma; Death

## Introduction

Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology but can sometimes be a pathological indicator. It requires a fast and adequate care because can engage the prognosis [1].

There are different therapeutic approaches for the management of pneumothorax: manual exsufflation, conventional chest drainage and other more invasive methods [2].

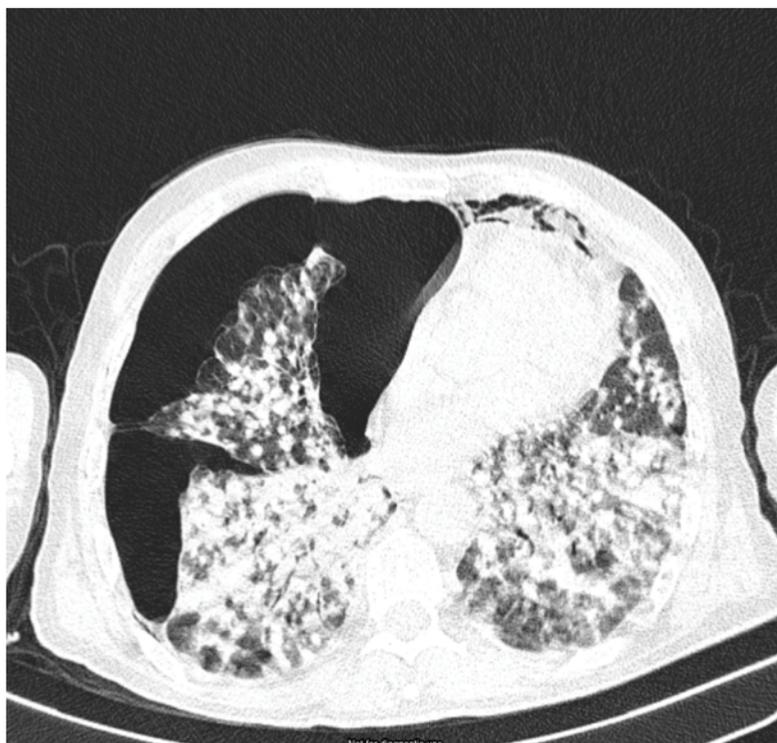
We report the case of a young patient who consults for dyspnea with sudden chest pain and for whom thorax CT imaging required to look for a pneumothorax, revealed the presence of a tumor process at a advanced stage.

## Observation

Mr L M, age 37, Smoking, 10 pack year, without other notable antecedents.

The patient presented a cough and dyspnea with traileed 3 months; he consulted in the emergency room for chest pain with worsening of his symptomatology.

The X ray performed showed the presence of a right pneumothorax with bilateral heterogeneous lung opacity. A chest CT scan was performed, it objectified an advanced tumor process with carcinomatous lymphangitis (Figure 1).



**Figure 1:** Chest CT scan showing a right pneumothorax with an advanced stage of lung tumor process.

Patient admitted to resuscitation, put under mask at high concentration, with a flow of 10 liter of oxygen and then a thoracic drainage was performed.

An initial improvement of the symptomatology with regression of O<sub>2</sub> requirements and decrease of tachycardia has been noticed.

The patient presented 24 hours before, a reagravation of his respiratory status.

On the control X-ray, we note the persistence of pneumothorax with well placed drain, but worsening of tumor lesions, causing the death of the patient by refractory respiratory failure.

### Discussion

Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology but can sometimes be a pathological indicator. It requires a fast and adequate care because can engage the prognosis. [1].

The most common etiologies are chronic obstructive pulmonary disease, pulmonary tuberculosis, pulmonary staphylococcal disease, neoplastic pathology [3].

Spontaneous Pneumothorax associated with malignant lung tumor lesion is relatively rare, with only 0.5 to 3% of pneumothorax found in cancer. It is most often pulmonary metastases of extra-thoracic tumors, less frequently from primary bronchial cancers, and sometimes pulmonary lesions of haematological diseases [4].

In 1983, Hillerd., *et al.* found that there is only a single case of spontaneous pneumothorax revealing the pathology out of 4710 patients presenting mesothelioma [5], the following year, Law described 3 cases out of 140 (2%) [6].

According to Boutin., *et al.* the frequency of pneumothorax revealing malignant pleural mesothelioma is estimated at 1% [7].

The clinical symptomatology of mesothelioma, revealed by spontaneous pneumothorax, is not specific: chest pain, dyspnea, cough. More unusually, it results in a bilateral spontaneous pneumothorax [8].

The mechanism producing pneumothorax from lung cancer is not well understood, but a number of theories have been advanced. The first is that it may be the result of tumor necrosis – rupture of the necrotic neoplastic tissue in the pleural cavity; the second, that it may be caused by the rupture of the necrotic tumor nodule or necrosis of subpleural metastases. A third is cancer of the check valve mechanism: the tumor at the lung periphery can obstruct bronchioles and lead to local overdistention and rupture of the lung. The fourth is that most patients with lung cancer have chronic bronchitis or emphysema bullae and these bullae may rupture following the disturbance of the lung architecture due to bronchial cancer [9].

There are different therapeutic approaches for the management of pneumothorax: manual exsufflation, conventional chest drainage and other more invasive methods [2].

The choice of the therapeutic remains controversial, however an etiological treatment must be started as soon as possible. Chest drainage is always indicated. In case of failure or recurrence, chemical pleurodesis and surgery are indicated, sometimes even from the outset [10,11].

Surgical treatment of spontaneous pneumothorax is performed by video assisted thoracic surgery by combining resection of bubbles and abrasion.

Other techniques can be used with similar results (thoracotomy, pleurectomy, silver nitrate).

But surgery remains to be avoided in these patients considering the anesthetic risk and technical difficulties [12,13].

Extracorporeal membrane oxygenation can give the patient more chances, especially refractive hypoxemia. This technique uses a membrane gas exchanger. By extension, the ECMO has become a respiratory and cardiorespiratory assistance technique used in case of respiratory failure and/or cardiac failure while waiting for the restoration of a normal respiratory state or a possible transplantation. Its use is easy, quick, and can be initiated in the bed of the patient.

Some thoracic surgery centers use it routinely as assistance to the realization of lung transplantation and also some intensive care unit teams use it for the treatment of acute respiratory distress syndrome [14].

In our case, the patient died because of the refractive hypoxemia, the ECMO could be a good alternative even with the bad prognosis.

The prognosis remains reserved. Survival varies according to studies and inclusion criteria. on average, 5-year survival is 2% [15].

### Conclusion

Spontaneous secondary pneumothorax occurs in patients with known pulmonary pathology.

Neoplastic pathology is one of the etiologies described in the literature. spontaneous pneumothorax revealing a neoplastic pathology is extremely rare. Chest CT scan allows diagnosis.

The treatment remains controversial mainly by thoracic drainage, however etiological treatment should be started as soon as possible. the prognosis remains reserved.

### Source of Support

None.

### Conflict of Interest

The authors declare no competing interest.

### Bibliography

1. Dermech N., *et al.* "Spontaneous pneumothorax secondary to chronic obstructive pulmonary disease". *Revue des Maladies Respiratoires* 29 (2012): A89-A90.
2. Moubachir H., *et al.* "Management of the first episode of spontaneous pneumothorax". *Respiratory Disease Review* 33.9 (2016): 789-793.
3. Fdil S., *et al.* "Etiological profile of secondary spontaneous pneumothorax in young subjects: about 169 cases". *Review of Respiratory Diseases* 33 (2016): A258.
4. S Mezghani., *et al.* "Spontaneous recurrent pneumothorax complicating pulmonary metastases of osteosarcoma". *Revue de Pneumologie Clinique* 61 (2005): 50-52.
5. Hillerdal G. "Malignant mesothelioma 1982. Review of 4710 published cases". *British Journal of Diseases of the Chest* 77 (1983): 321-343.

6. Law MR., *et al.* "Malignant mesothelioma of the pleura: clinical aspects and symptomatic treatment". *European Journal of Respiratory Diseases* 65.3 (1984): 162-168.
7. Boutin C., *et al.* "Malignant mesothelioma: clinical and therapeutic study". *Revue des Maladies Respiratoires* 16 (1999): 1317-1326.
8. F Saint-Georges., *et al.* "Three cases of spontaneous pneumothorax revealing malignant pleural mesothelioma". *Revue de Pneumologie Clinique* 60 (2004): 4-229-233
9. Vencevičius V and Cicėnas S. "Spontaneous pneumothorax as a first sign of pulmonary carcinoma". *World Journal of Surgical Oncology* 7.1 (2009): 57.
10. Elkard I., *et al.* "Secondary spontaneous pneumothorax". *Respiratory Disease Review* 33 (2016): A252.
11. Choubi M., *et al.* "Secondary spontaneous pneumothorax". *Revue Des Maladies Respiratoires* 32 (2015): A197.
12. S Msaad., *et al.* "Primitive pulmonary leiomyosarcoma revealed by spontaneous pneumothorax". *Revue de Pneumologie Clinique* 65.5 (2009): 309-312.
13. F Pons., *et al.* "Dahan management of spontaneous pneumothorax". *EMC-Chirurgie* 2 (2005): 266-281
14. PE Falcoz and G Capellier. "ECMO Principles and indications for pulmonary pathology in adults EMC - Techniques Chirurgicales". *Thorax* 4.2: 1-14.
15. Samah Joobeur., *et al.* "Saoussen Cheikh Mhamed, Houda Mahou, Naceur Rouatbi, Ali El Kamel ; Primary pulmonary adenocarcinoma: experience of a Tunisian hospital". *Pan African Medical Journal* 21 (2015): 216.

**Volume 3 Issue 11 November 2019**

**©All rights reserved by Yassine Smiti., *et al.***