

## Spontaneous Hemothorax Caused by Lung Cancer

P. Ausín,<sup>a</sup> A. Gómez-Caro,<sup>b</sup> R. Pérez Rojo,<sup>a</sup> F.J. Moradiellos,<sup>b</sup> V. Díaz-Hellín,<sup>b</sup> and J.L. Martín de Nicolás<sup>b</sup>

<sup>a</sup>Servicio de Neumología, Hospital Universitario 12 de Octubre, Madrid, Spain.

<sup>b</sup>Servicio de Cirugía Torácica, Hospital Universitario 12 de Octubre, Madrid, Spain.

**Spontaneous hemothorax is an extremely rare complication of malignant disease. We describe the case of a 26-year-old man with spontaneous hemothorax secondary to large-cell carcinoma of the lung, with liver and bone metastases. The patient died in the fifth week after hospitalization.**

**Key words:** *Hemothorax. Lung cancer. Pleural effusion. Metastases.*

**Hemotórax espontáneo por carcinoma broncogénico**

**El hemotórax espontáneo como forma de presentación de una enfermedad maligna es extremadamente raro. Describimos el caso de un varón de 26 años con un hemotórax espontáneo secundario a un carcinoma broncogénico de células grandes con metástasis hepáticas y óseas que falleció en la quinta semana de ingreso.**

**Palabras clave:** *Hemotórax. Carcinoma broncogénico. Derrame pleural. Metástasis.*

### Introduction

Hemothorax is an extremely rare presentation of malignant disease, and spontaneous hemothorax is only rarely reported in the literature as a presentation of lung cancer.<sup>1</sup> We describe the case of a 26-year-old man with spontaneous hemothorax as the first manifestation of disseminated lung cancer.

### Case Description

A 26-year-old black man with no history of drug or alcohol abuse or medical history of interest came to our emergency department complaining of increasing dyspnea of 1 week's duration, bloody sputum in the last 48 hours, general malaise, sweating and shivering, central chest pain, lower back pain, and pain in the right pelvis.

Blood tests showed a hemoglobin concentration of 9 g/dL, hematocrit of 27%, and neutrophilic leukocytosis of 13 500 cells/ $\mu$ L. Biochemistry indicated cholestasis and hypoalbuminemia. Blood gas analysis showed respiratory insufficiency with a pH of 7.45, PaCO<sub>2</sub> of 37 mm Hg, PaO<sub>2</sub> of 54 mm Hg, HCO<sub>3</sub> of 27  $\mu$ mol/L. In coagulation tests prothrombin activity was 50%, activated partial thromboplastin time in tissue was 17 seconds, and the fibrinogen concentration was 300 mg/dL.

A chest radiograph (Figure 1A) revealed a right pleural effusion that occupied a third of the hemithorax and bilateral interstitial involvement that was more evident in the right upper and middle lobes.

A diagnostic thoracentesis yielded blood-tinged fluid: the red cell count was 2.32  $10^6$  cells/ $\mu$ L; hematocrit, 19%; white cell count, 5100/ $\mu$ L (neutrophils, 80%; monocytes, 20%); glucose concentration, 87 mg/dL; lactate dehydrogenase concentration, 121 IU/L; and pH, 7.01.

A chest tube (32F catheter) was then inserted at the midaxillary line through the fifth intercostal space and 3100 mL of pleural fluid was drained over the next 12 hours. The clinical picture and blood gases responded favorably. Production of pleural fluid on successive days was less than 200 mL/day. The chest tube was removed on the fifth day and a satisfactory chest radiograph confirmed resolution of the hemothorax.

Cytologic examination of the pleural fluid revealed absence of malignant cells, tumor markers 72.4, 15.3, 19.9, and carcinoembryonic antigen. A smear test and sputum culture in Löwenstein-Jensen medium were also negative, as was serology for human immunodeficiency virus, hepatitis B and C, Epstein-Barr virus, and cytomegalovirus.

Computed tomography (CT) scans of the chest and abdomen revealed infiltration of the pulmonary parenchyma—more evident in the middle lobe—that extended to the pleura (Figure 1B). In the abdomen, multiple space-occupying lesions were observed in the liver (Figure 2A) and the skeletal structure had osteolytic lesions indicative of metastases to the dorsolumbar spine, pelvis, ischiopubic rami, and acetabula (Figure 2B).

A transbronchial biopsy was obtained using fiberoptic bronchoscopy through the lateral segmental bronchus of the right middle lobe. A pathological diagnosis of primary large cell carcinoma of the lung was supported by immunohistochemistry positive for pankeratin AE1-AE3, cytokeratin 7, and epithelial membrane antigen.

The result of CT-guided fine-needle aspiration of the hepatic lesions and bone marrow was indicative of metastases from large cell lung carcinoma.

The patient was classified at stage IVC. Chemotherapy was rejected and the patient died 5 weeks after hospitalization.

Correspondence: Dra. P. Ausín.  
Servicio de Neumología, Hospital Universitario 12 de Octubre,  
Ctra. de Andalucía, km 5,400. Madrid, España.  
E-mail: ausinpilar@yahoo.es

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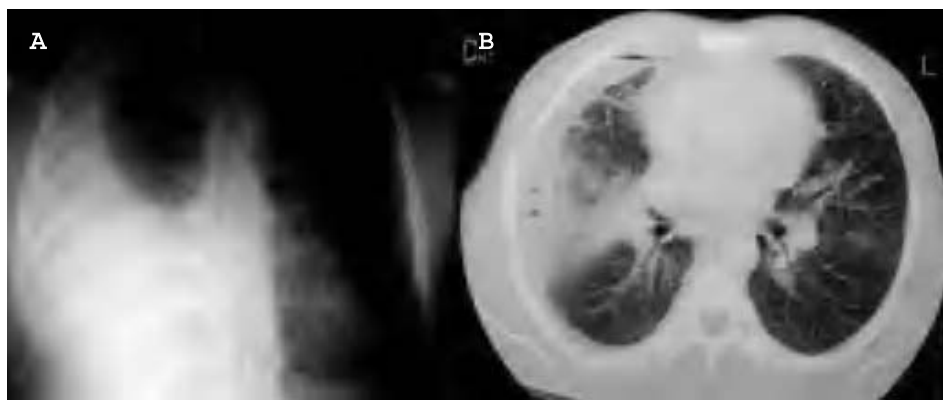


Figure 1. (A) Posteroanterior chest radiograph that shows pleural effusion. (B) Computed tomography of the chest that shows a mass in the right parahilar zone, with infiltration of the parenchyma and pleural effusion.

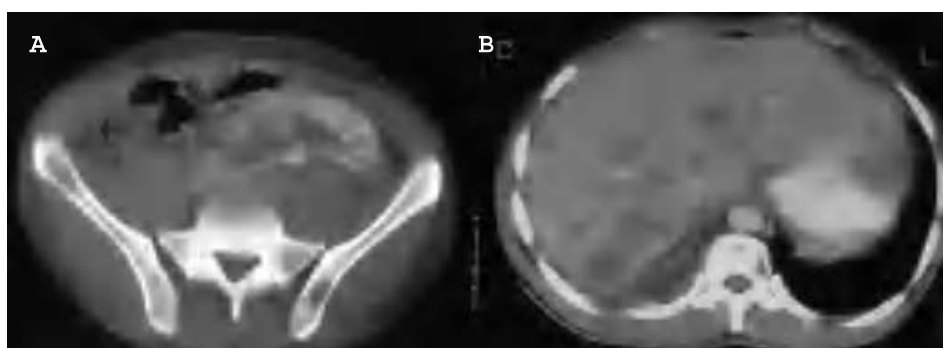


Figure 2. Computed tomography of the abdomen that shows (A) multiple bilateral hepatic and pelvic metastases and (B) osteolytic metastases in the pelvis and vertebral body.

## Discussion

Spontaneous hemothorax is a rare entity that is infrequently associated with malignant disease.<sup>1</sup> The most common cause of spontaneous pneumohemothorax is the rupture of pleural adhesions related to spontaneous pneumothorax. The causes of hemothorax without pneumothorax are even rarer, however. Coagulation disorders are usually iatrogenic, caused by improper dosage of therapeutic anticoagulants.<sup>2</sup> Vascular causes, such as aortic dissection and pulmonary arteriovenous fistula, are also rare.<sup>3</sup>

Hemothorax presents with malignant disease less commonly than pneumothorax does.<sup>2</sup> Most reported cases have involved pleural metastasis of gynecological tumors, choriocarcinoma, and sarcoma.<sup>4</sup> Spontaneous hemothorax associated with lung cancer is exceptional; in fact there is only a single case reported in the literature.<sup>1</sup> Other pulmonary tumors, such as pleuropulmonary blastoma and pleuropulmonary angiosarcoma, have also been exceptional causes.<sup>5</sup> Likewise, mediastinal and pleural tumors are rare causes, as are cystic adenoid malformations, which can be treated by video-assisted surgery.<sup>6-8</sup>

The mechanisms that lead to hemothorax are described as the compression or necrosis of pleural and pulmonary tissue or invasion of the pulmonary vessels.<sup>1</sup> Hemothorax is only exceptionally associated with infections although the literature contains a few such cases, in the context of sepsis, fungal infection, and chicken pox. Another cause, perhaps more frequent, is costal exostosis.<sup>2</sup> When no

cause of hemothorax can be found, the case is referred to as idiopathic spontaneous hemothorax.<sup>9,10</sup> Hemothorax has not been considered a contraindication for oncologic surgery in the cases published.

## REFERENCES

1. Chou SH, Cheng YJ, Kao EL, Chai CY. Spontaneous hemothorax: an unusual presentation of primary lung cancer. *Thorax*. 1993;48:1185-6.
2. Martínez FJ, Villanueva AG, Pickering R, Becker FS, Smith DR. Spontaneous hemothorax. Report of 6 cases and review of the literature. *Medicine (Baltimore)*. 1993;71:354-68.
3. Pick A, Deschamps C, Stanson AW. Pulmonary arteriovenous fistula: presentation, diagnosis, and treatment. *World J Surg*. 1999; 23:1118-22.
4. Sudduth CD, Strange C, Campbell BA, Sahn SA. Metastatic choriocarcinoma of the lung presenting as haemothorax. *Chest*. 1991;2:527-8.
5. Liu SF, Wu CC, Lai YF, Hsieh MJ. Massive hemoptysis and hemothorax caused by pleuropulmonary angiosarcoma. *Am J Emerg Med*. 2002;20:374-5.
6. Templeton PA, Vainright JR, Rodríguez A, Diaconis JN. Mediastinal tumors presenting as spontaneous haemothorax, simulating aortic dissection. *Chest*. 1988;93:828-30.
7. Cifrián Martínez JM, Agüero Balbín R, García Pérez MM. Hemotórax espontáneo masivo como manifestación inicial de mesotelioma pleural maligno. *Arch Bronconeumol*. 1994;30:70.
8. Congregado M, Loscertales J, Girón-Arjona JC, Jiménez-Merchán R, Arroyo-Tristán A, González Campora R. Cirugía videotoracoscópica videoasistida en 3 casos de malformación adenoide quística en adulto. *Arch Bronconeumol*. 2004;40:236-9.
9. García Barajas S, Díaz-Hellín Gude V, Marrón Fernández MC. Hemotórax espontáneo idiopático. *Arch Bronconeumol*. 1997; 33:85-6.
10. García Talavera I, Pérez Negrín L, Casanova Macario C. Hemotórax espontáneo idiopático. *Arch Bronconeumol*. 2000;36:73-4.