Spontaneous Bilateral Pneumothorax in a Patient With Mediastinal Enlargement*

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A 24-year-old white man was referred to our hospital for analysis of acute dyspnea. He had been healthy until 4 days before admission, when he became slightly ill with flulike symptoms. The day of admission he went out for a walk and suddenly became dyspneic without coughing or trauma. He smoked 25 cigarettes a day, was unemployed, and reported no further complaints.

On physical examination, the patient was a 1.90-m-tall, lean, leptosomic young man with a body weight of 72 kg. The right hemithorax was hyperresonant on percussion with diminished breath sounds. There was no subcutaneous emphysema, and further examination was completely normal. The chest x-ray film showed a pneumothorax on the right and an abnormal mediastinal configuration without a shift in respiration (Fig 1). The lateral view showed a tumor in the anterior mediastinum (Fig 2).

The patient was admitted to our pulmonology clinic. At thoracoscopy, the right lung showed no macroscopic pathologic features, bullae, or blebs. After inspection, talc pleurodesis was performed, and a thoracic drain was placed. The right lung was fully expanded on a control chest x-ray film, but 3 days later a radiograph showed a pneumothorax on the left side with the right lung still fully expanded. The new left-sided pneumothorax was treated conservatively. After another 24 h air leakage developed through the thoracic drain positioned in the right (contralateral) pleural cavity.

A computed tomographic scan of the chest showed a process in the anterior mediastinum with a lobulated aspect (Fig 3). Malignant thymoma, thymic cyst, or thymic hyperplasia was suspected. To exclude a metastatic germ cell carcinoma, an ultrasonographic in-
vestigation of the genitals was performed; the findings were normal.

Thyroid function measurements (free serum thyroxine and thyroid-stimulating hormone levels) were normal. Levels of the tumor markers carcinoembryonic antigen, α-fetoprotein, and β-human chorionic gonadotropin were also normal. We found no antibodies for skeletal muscle or acetylcholine receptors. Findings from immunoelectrophoresis (to detect hypogammaglobulinemia) and a red blood cell count (to rule out red cell aplasia) were within normal range. The consulting neurologist found no signs of myasthenia gravis.

Diagnosis: Bilateral pneumothorax secondary to a benign thymic cyst

Sternotomy was performed, during which a smooth soft process measuring 15 × 11 × 2 cm was found. The process arose from the anterior and middle mediastinum and reached into the aortic curvature. The process followed the anatomical borders perfectly and was macroscopically benign. The process was removed in toto. The left mediastinal pleura showed a defect (hole), and a drain was placed in the left thoracic cavity.

Pathologic investigation showed a benign thymic cyst without any neoplastic cells.

The patient was at increased risk for pneumothorax due to his leptosomic body type in combination with his age, sex, and smoking habits. Whether a mediastinal process increases pulmonary traction and thus enhances the risk of pneumothorax is not known.

Mediastinal tumors are most frequently seen in late childhood and early adulthood and can be divided into tumors of the anterior, middle, and superior mediastinum. A different differential diagnosis can be made for each location. In the anterior mediastinum, tumors of thymic origin (hyperplasia, cysts, malignant thymomas, and benign thymic tumors) and malignant lymphomas are most frequently seen, followed by germ cell tumors and tumors of the thyroid. Parathyroid adenomas, carcinoid tumors, primary carcinomas, lipomas, and Morgagni's hernias are rare.3,4

In the literature on this subject, we found only one case of a malignant thymoma associated with a spontaneous pneumothorax caused by invasive growth into the pleura.5 Spontaneous pneumothoraces have been reported after chemotherapy for malignant thymoma with pulmonary metastases, as well as in patients with pulmonary neoplasms and preceding the appearance of pulmonary metastases in patients with a sarcoma.6,7 It is considered necessary to perform a surgical evaluation of every mediastinal tumor.8 We found no record of patients with thymic cysts and pneumothoraces.

A causal relationship between the thymic cyst and the development of the second (left-sided) pneumothorax and later bilateral pneumothorax in our patient may be possible. The air leakage from the left to the right pleural cavity is explained by the defect in the left mediastinal pleura that we found during sternotomy. This defect appeared to be preexistent and may have been caused by the thymic cyst. As far as we know, this is the first record of a patient with a benign thymic cyst and successively bilateral pneumothorax.

REFERENCES