Pneumothorax as Atypical Presentation of Bronchial Carcinoid
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We present a case of pneumothorax associated with an endobronchial carcinoid tumor in a 18-year-old man with dyspnea and chest pain. Additional tests were done, identifying in the chest roentgenogram a complete left pneumothorax with persistent leak, which was confirmed by computed tomography of the chest, and also finding an endobronchial lesion that limited the complete reexpansion of the left lung. Surgical excision was performed, and the lesion was identified as a typical bronchial carcinoid, with satisfactory outcome after the intervention.


Pneumothorax is a common condition and appears frequently in clinical practice. It has an incidence of 76 cases per million persons per year. In a high percentage of cases, its pathogenesis is reported to imply the existence of blebs and subpleural emphysema [1]. The medical literature includes a few cases of association between pneumothorax and pulmonary neoplasia [1, 2].

An 18-year-old male student presented with fever, chest pain, and dyspnea. He did not describe any allergies or toxic habits, and had had a history of asthma since childhood, which was treated with terbutaline if needed, without any other personal antecedents. He came to the emergency department with a 2-week history of left-sided chest pain and a fever of 38°C Celsius in the past 5 days, with dry cough and dyspnea on moderate effort.

At physical examination he was conscious and oriented, with a good general aspect. His vital signs were as follows: blood pressure 128/80 mm Hg, temperature 36.9°C, heart rate 100 beats/min, respiratory rate 20/min, O2 saturation 91% (baseline). There was no jugular neck vein distention or adenopathy. Heart auscultation yielded normal results, and at the pulmonary level there was an important decrease of sounds in the left hemithorax. The abdomen and extremities were normal.

Laboratory findings included the following: hemoglobin 14.6 mg/dL, hematocrit 43%, leukocytes 12,860 (normal formula), platelets 504,000 per microliter. There were no alterations in glucose level, electrolytes, or kidney function parameters. C-reactive protein was 16.4 UI, and procalcitonine was 0.4 ng/mL. An electrocardiogram at admission showed sinus tachycardia at 130 beats/min with voltage decrease at the left precordials.

A roentgenogram of the chest showed a complete left pneumothorax. It was decided to perform chest drainage with a chest tube, without a complete pulmonary reexpansion with persistence of the pneumothorax in the chest roentgenogram with an image of volume loss of all the left hemithorax with atelectasis in the superior left lobe and lingula (Fig 1).

Computed tomography of the chest and abdomen showed a partial left pneumothorax and atelectasis in the superior left lobe and lingula, with partial atelectasis in the lower left lobe and a 16 × 13 mm node at the lumen of the main left bronchus next to the bifurcation, with no signs of calcium and intensive enhancement after contrast administration compatible with endobronchial tumor

References
There was no pathologic adenopathy, the right hemithorax was normal, and there were no abnormalities in the abdomen.

With the existence of hard reexpanding left pneumothorax and an endobronchial node at the left main bronchus, the patient was referred to the thoracic surgery department for further studies and treatment. Both rigid and flexible bronchoscopies were performed and showed an endobronchial tumor that practically occluded the total lumen of the left main bronchus. Samples of the soft, friable, and richly vascularized mass were taken for pathologic examination, and then laser photocoagulation was performed, making the lumen of the left main bronchus permeable again. With the persistence of the hard reexpanding basal left pneumothorax, it was decided to make a second intervention with a left posterolateral incision in the fifth intercostal space. A large tumor was visualized, with an implantation zone at the bronchus level of the lower left lobe. Biopsy specimens were taken of the near and distal margins, and the final result was typical carcinoid with bronchial resection borders with no evidence of tumor infiltration (stage T1N0M0).

During the postoperative period, the patient had intense chest pain in the surgical site that necessitated the use of an epidural catheter to administer analgesic agents, with favorable results. After the intervention, it was possible to obtain complete pulmonary reexpansion, and in further follow-up visits there have been no signs of tumor recurrence. The patient has been asymptomatic for 2 years after operation.

Comment

Spontaneous primary pneumothorax is a common condition and appears frequently in clinical practice. It has an incidence of 76 cases per million persons per year. In a high percentage of cases, its pathogenesis is reported to imply the existence of blebs and subpleural emphysema [1]. The medical literature includes a few cases of association between pneumothorax and pulmonary neoplasia: it is estimated that 0.46% of lung malignancies are associated with spontaneous pneumothorax, whereas 0.03% of spontaneous pneumothorax cases originate with lung cancer [1, 2]. This form of presentation has been reported both in metastatic lung lesions and in primary lung lesions, and the most common lung tumors causing pneumothorax are non-mucinous bronchioalveolar tumor, adenocarcinoma, and large cell carcinoma [1–3]. These tumors are highly undifferentiated and grow fast, which may lead to cancer ischemia and a bronchopleural fistula, which provokes the pneumothorax [1]. Other neoplasia can also be associated with pneumothorax, especially soft tissue sarcomas (and, within these, angiosarcomas), metastatic germ cell tumors, Wilms’ tumor, liver tumors, pancreatic tumors, gynecologic tumors, and lymphoma [1, 2]. Within angiosarcomas, the tumors that most commonly cause pneumothorax are scalp angiosarcomas, which metastasize in the pleural surface and subpleural zone, becoming necrotic and leading to the appearance of a pneumothorax. They can also appear as spontaneous hemothorax or hemorrhagic pleural effusion, normally bilateral. There are a few published cases of metastasis presented as thin-walled lung cysts, which grow gradually and eventually break and cause pneumothorax [4].

The appearance of pneumothorax as the form of presentation of an endobronchial carcinoid tumor without distant metastases, as occurred in this case, is very infrequent. We have found only one published case of pneumothorax presenting as a manifestation of a carcinoid tumor [5].

A nonexpandable lung is a mechanical complication that prevents the lung from expanding to the thoracic wall, which causes abnormal apposition of the visceral and parietal pleurae. The pathologic mechanisms implied in this disorder are collapsed lung caused by endobronchial obstruction, severe pulmonary parenchyma fibrosis, and visceral pleura restriction [6, 7]. It is
not clear which one is involved in the appearance of the pneumothorax in our case; our patient had an endobronchial tumor without any metastasis, so the most likely mechanism would be a valve mechanism that caused postobstructive emphysematous expansion of the alveoli and constitution of subpleural bullae, which eventually would break into the pleural space [2]. In this patient, the presence of incomplete lung reexpansion was the reason for carrying out complementary imaging studies that allowed us to reach the diagnosis of endobronchial tumor, which made it difficult for the lung to reexpand, producing lingula and left lower lobe collapse. Steinhäuslin and Cuttat [8] point out the need of a more detailed study in patients older than 40 years, and in heavy smokers in whom after an episode of pneumothorax treated with transthoracic drainage, the affected lung does not reexpand completely. We believe that other imaging studies are indicated in cases of a pneumothorax that are not resolved after transthoracic drainage, ie, pneumothorax with torpid evolution [2].

References


Osteoid Osteoma of the Rib Presenting as Thoracic Outlet Syndrome

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Osteoid osteoma of the rib is a rare condition mostly mentioned in case report studies as lesions involving posterior region of the rib causing scoliosis. This report presents a 22-year-old man who complained of neurologic thoracic outlet syndrome symptoms. The pathologic study of the resected mass of the first rib confirmed the diagnosis of osteoid osteoma. This unique presentation of the osteoid osteoma as thoracic outlet syndrome suggests that this pathologic involvement of the ribs is not confined to the symptoms of pain and scoliosis.

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A 22-year-old man presented with a pain and paresthesia in left upper extremity during the last 2 months. The patient reported similar symptoms with less severity and approximate frequency of once monthly during the last 2 years. The pains were worsened by anxiety. His symptoms had increased in severity during the last 2 months in a way that woke him during the night if he did not use analgescics. The patient did not have any background disease or trauma in his history, and no similar problem was reported in his familial history.

The physical examination detected decreased force of the left upper extremity compared with the right side. The left hand felt cooler in the palpation of upper extremities. The patient’s symptoms could be reproduced by an abduction and external rotation maneuver of the affected extremity. The blood pressures of upper extremities did not differ significantly, and both radial pulses were detected symmetrically. An electromyogram and nerve conduction velocity study to evaluate his complaint revealed findings compatible with mild to moderate compression on the lower trunk of the brachial plexus. All of the studied hematologic and biochemical laboratory factors were within the normal reference ranges.

A chest roentgenogram showed a large mass in the upper left hemithorax with rib destruction but no shift of the midline structures (Fig 1). A computed tomography scan revealed a large heterogeneous mass arising from left chest wall, with lytic destruction of the first rib and coarse calcification (Fig 2). Owing to the presence of calcification in the tumor, a provisional diagnosis of osteogenic sarcoma with a differential diagnosis of chondrosarcoma was made.

The patient was operated on and mass was excised by the supraclavicular approach. The large tumor of the first