



Diffuse opacification of the hemithorax

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A 72-year-old male with a smoking history of 60 pack-years presented with a 1-year history of dry cough at night, together with a 3-month history of blood-streaked sputum, having lost 9 kg since the onset of those symptoms. A chest X-ray showed diffuse opacification of the right hemithorax, with preserved volume (Figure 1A). A CT scan of the chest showed obstruction of the right main bronchus, with partial collapse of the corresponding lung, as well as pleural effusion (Figure 1B).

Diffuse opacification of a hemithorax is known as an opaque hemithorax (OH). This condition is commonly seen in emergency departments, and the attending physician needs to make an immediate decision regarding the most appropriate course of action. The differential diagnosis is broad and is mainly based on the position of the mediastinum, which indirectly reflects the volume of the affected hemithorax.

Patients with OH can present with a reduction in the volume of the affected hemithorax (with the mediastinum shifted to that side), an increase in its volume (with the mediastinum shifted to the opposite side), or no change in its volume (with a centered mediastinum). In most cases, that differentiation is easily made by

using ultrasound or CT. The main causes of OH with increased volume are massive pleural effusions and, less commonly, large thoracic masses occupying the entire hemithorax. Reduced-volume OH can be due to congenital anomalies (e.g., pulmonary agenesis or aplasia), surgical history (previous pneumonectomy), or total atelectasis. Although the causes of atelectasis are varied, bronchial obstruction—by a foreign body in children or by an endobronchial tumor in adults—is the most common etiology. The main differential diagnoses of OH with preserved volume are extensive pneumonia, in which an air bronchogram is frequently observed, and bronchogenic carcinoma, with a combination of atelectasis and pleural effusion, which have antagonistic effects on the volume of the affected hemithorax.^(1,2)

In the case described here, we observed a right-sided OH with a centered mediastinum (i.e., a preserved-volume OH). The patient had no history of infection, nor was there an air bronchogram, which allowed us to rule out the hypothesis of extensive pneumonia. A chest CT showed obstruction of the right main bronchus, with partial atelectasis and with pleural effusion. Bronchoscopy showed a bronchogenic carcinoma obstructing the right main bronchus.



Figure 1. Anteroposterior chest X-ray (in A) showing diffuse opacification of the right hemithorax (opaque hemithorax). Note that the mediastinal structures, particularly the trachea, are centered and in a normal position. In B, coronal CT reconstruction showing obstruction of the right main bronchus (arrow). Note also that the lung is partially collapsed and that there is pleural effusion. These findings are characteristic of an opaque hemithorax with preserved volume.

REFERENCES

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