



Unilateral hyperlucent lung

Edson Marchiori^{1,a}, Bruno Hochhegger^{2,b}, Gláucia Zanetti^{1,c}

A seven-year-old girl presented to the emergency room with a 24-h history of dyspnea and dry cough. Physical examination revealed wheezing with no other abnormalities. Chest CT showed hypoattenuation in the left lung (Figure 1).

In most cases, unilateral hyperlucent lung is first identified on a chest X-ray. The initial difficulty is to define whether the change is pulmonary or extrapulmonary. In this type of evaluation, chest CT is superior to chest X-ray because it eliminates the superimposition of thoracic structures. Extrapulmonary causes include technical factors; chest wall changes such as mastectomy, scoliosis, and Poland syndrome; and pleural changes (pneumothorax). Pulmonary causes can be congenital (congenital lobar emphysema, bronchial atresia, or cystic adenomatoid malformation) or acquired (e.g., Swyer-James syndrome, massive thromboembolism, and partial bronchial obstruction). It is important to

note that most of the etiologies seen in children, even congenital ones, can also be seen in adults, because they usually have a benign course, patients remaining asymptomatic into adulthood.

The most important cause of unilateral hyperlucency/pulmonary hypoattenuation, because of its clinical implications, is partial bronchial obstruction, creating a check-valve mechanism. In children, the main cause is obstruction by foreign body aspiration (FBA)⁽¹⁾, whereas the main cause in adults is obstruction by neoplastic processes, particularly bronchial cancer.⁽²⁾ The compromised lung may be with normal or hyperinflation. Hypoattenuation occurs only in cases of partial obstruction. When the obstruction is total, the tendency is for atelectasis to develop. Bronchoscopy plays a key role in the study of these patients.

In our patient, the acute clinical analysis and the presence of wheezing with no history of asthma led us to suspect FBA. On CT, we observed not only hypoattenuation on the left but also a foreign body inside the left main bronchus.

The diagnosis of FBA in a child is not always easy. In most cases, the parents do not witness the accident and the suspicion must be made based on the clinical history, physical examination, and complementary diagnostic methods. However, some patients are asymptomatic and show no alterations on physical examination; in addition, most aspirated foreign bodies are radiolucent. The diagnosis of FBA should be made early, because a delay in its recognition and treatment can result in permanent sequelae or fatal damage. Many patients are treated for weeks to months for recurrent respiratory diseases until FBA is suspected. In conclusion, the presence of acute respiratory symptoms associated with pulmonary hypoattenuation or atelectasis in children should be considered a indicator of FBA, prompting an early request for bronchoscopy, because it is a method that can be both diagnostic and therapeutic.



Figure 1. Chest CT scan with coronal reconstruction showing diffuse hypoattenuation in the left lung. Also note the opacity with soft-tissue density within the left main bronchus.

REFERENCES

1. Barbosa AJ, Zanetti GR, Marchiori E. Bronchial foreign body in children. The importance of correct diagnosis. *Radiol Bras.* 2016;49(5):340-342.
2. Marchiori E, Hochhegger B, Zanetti G. Opaque hemithorax. *J Bras Pneumol* 2017;43(3):161-161.

1. Universidade Federal do Rio de Janeiro, Rio de Janeiro (RJ) Brasil.

2. Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre (RS) Brasil.

a. <http://orcid.org/0000-0001-8797-7380>; b. <http://orcid.org/0000-0003-1984-4636>; c. <http://orcid.org/0000-0003-0261-1860>