

Clinical Image

Peribronchovascular emphysema. The Macklin effect\*

Enfisema peribroncovascular. Efecto Macklin

Antía Ferreiro,<sup>a</sup> Galo Granados,<sup>a</sup> Ana Villar<sup>a,b,c,\*</sup>

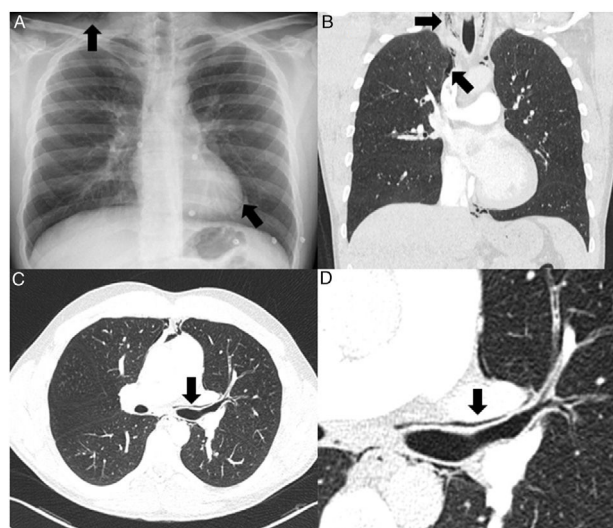
<sup>a</sup> Servicio de Neumología, Hospital Universitari Vall d'Hebron, Barcelona, Spain

<sup>b</sup> CIBER Enfermedades Respiratorias (CIBERES), Madrid, Spain

<sup>c</sup> Vall d'Hebron Institut de Recerca (VHIR), Barcelona, Spain



A 27-year-old man with a history of asthma was seen in the emergency department for acute respiratory failure, associated with signs of bronchospasm and fever of 38.5 °C. A chest X-ray was performed, revealing pneumomediastinum associated with subcu-



**Fig. 1.** (A) Plain chest X-ray in posteroanterior projection showing pneumomediastinum and subcutaneous emphysema (arrows). (B) Coronal reconstruction of the chest CT scan (lung window) confirming the presence of pneumomediastinum and subcutaneous emphysema (arrows). (C) Axial image of the chest CT (lung window) showing left peribronchovascular emphysema with pneumomediastinum (arrow) – the Macklin effect. (D) Enlarged image of peribronchovascular emphysema (arrow).

taneous emphysema (Fig. 1A), with no criteria for pleural drainage. No foci of condensation associated with pneumonia were observed. Given a diagnostic orientation of acute bronchitis, bronchodilator treatment and antibiotic therapy with amoxicillin-clavulanic acid were initiated. Although the patient showed some improvement, with resolution of bronchospasm, he continued to require supplementary low-flow oxygen therapy, so a CT angiogram was performed. This ruled out pulmonary embolism, but revealed areas of peribronchovascular emphysema, also known as the “Macklin effect” (Fig. 1C and D). Mediastinal emphysema and the previously reported subcutaneous emphysema were also observed (Fig. 1B). The patient showed progressive clinical improvement with the previously prescribed treatment.

The pathophysiology of spontaneous pneumomediastinum was first described in 1937 by Charles Macklin. It is caused by abrupt increases in airway pressure, which result in the rupture of the alveolar septa and subsequent gas leakage through the peribronchovascular sheaths, producing a characteristic image of peribronchovascular emphysema (Fig. 1C and D) and mediastinal dissection<sup>1,2</sup>. Treatment is conservative, with oxygen therapy, rest, and analgesia.

References

1. Sakai M, Murayama S, Gibo M, Akamine T, Nagata O. Frequent cause of the Macklin effect in spontaneous pneumomediastinum: demonstration by multidetector-row computed tomography. *J Comput Assist Tomogr.* 2006;30:92–4.
2. Chassagnon G, Favelle O, Deroigis V, Cottier JP. Spontaneous pneumomediastinum due to the Macklin effect: less is more. *Intern Emerg Med.* 2015;10:759–61.

\* Please cite this article as: Ferreiro A, Granados G, Villar A. Enfisema peribroncovascular. Efecto Macklin. *Arch Bronconeumol.* 2021;57:697.

\* Corresponding author.

E-mail address: [avillar@vhebron.net](mailto:avillar@vhebron.net) (A. Villar).