



## Images in medicine

# Mediastinal air leak following intense exercise in a patient with uncontrolled asthma



## Fuga de aire mediastínico tras ejercicio físico intenso en paciente con asma no controlada

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A 24-year-old female with poorly controlled asthma due to lack of maintenance therapy presented with progressive dyspnea and sharp retrosternal chest pain for 72 h, which began after intense physical exertion during a fitness evaluation for security forces admission. On physical examination, she had oxygen saturation of 85%, tachycardia, bilateral wheezing, rhonchi, and Hamman's sign. A chest CT (Fig. 1, panels A and B) revealed free air in the mediastinum and subcutaneous emphysema, consistent with spontaneous pneumomediastinum secondary to the Macklin effect. These pathological findings are indicated by arrows in the images. Treatment with corticosteroids and inhaled therapy improved asthma control, and the pneumomediastinum resolved within weeks.

Spontaneous pneumomediastinum is a rare condition in which air accumulates in the mediastinum without trauma, typically due to the Macklin effect (a mechanism involving alveolar rupture from increased intrathoracic pressure). Triggers include exertion, Valsalva maneuvers, coughing, or vomiting. It primarily affects young males but can occur in patients with poorly controlled asthma. Symptoms include dyspnea, retrosternal pain, and Hamman's sign. Diagnosis relies on CT imaging, which shows air in the mediastinum and peribronchovascular emphysema. Management is conservative, focusing on rest, analgesia, and treating underlying conditions. Optimizing asthma control prevents recurrence. Early recognition ensures a favorable prognosis.

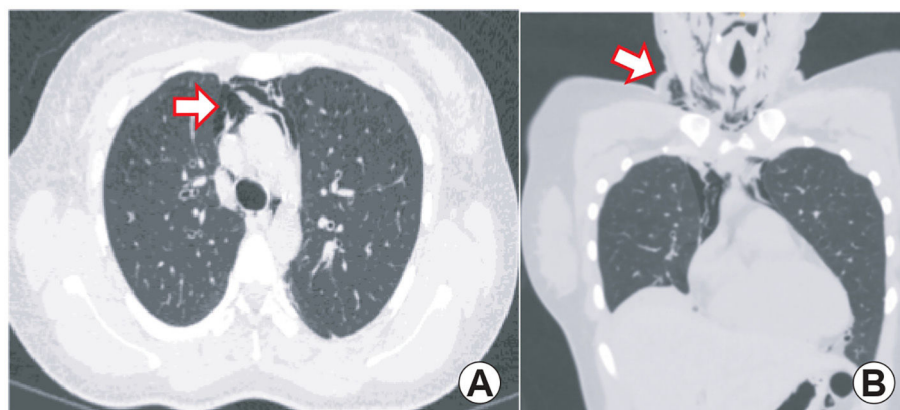


Fig. 1. Chest CT demonstrating evidence of pneumomediastinum (panel A) and subcutaneous emphysema in the neck region (panel B).

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The patient has provided consent to publish their case and images.

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### **Artificial intelligence involvement**

ChatGPT was used for technical assistance related to the English translation of the manuscript.

### **Declaration of conflicts of interest**

The authors declare no conflicts of interest.