

Hamman's Sign: Rediscovering Cardiac Auscultation Through a Pneumomediastinum

Sinal de Hamman: Redescobrimo a Auscultação Cardíaca Através de um Pneumomediastino

Keywords: Chest Pain/diagnosis; Heart Auscultation; Mediastinal Emphysema/diagnosis

Palavras-chave: Auscultação Cardíaca/diagnóstico; Dor no Peito; Enfisema Mediastínico/diagnóstico

Pneumomediastinum and pericarditis are distinct etiologies of chest pain with unique mechanisms and specific treatments, but they can exhibit overlapping characteristics.

A 19-year-old male with well-controlled asthma and anti-hydroxy-3-methylglutaryl-co-enzyme A reductase (anti-HMGCR) inflammatory myopathy (IM) under corticosteroids, immunoglobulins and methotrexate, presented with three-day retrosternal pleuritic pain, triggered by a Valsalva maneuver during exercise at the gym. The patient had had an upper respiratory tract infection in the previous month. His physical examination was normal, except for a crackling noise noticed on the left border of the sternum, interpreted as a pericardial rub. The electrocardiogram (ECG) showed sinus rhythm with slight PR depression of the inferior leads and early repolarization pattern (Fig. 1). Serial troponins were negative. A transthoracic echocardiogram was unremarkable. A chest X-ray revealed a pneumomediastinum (Fig. 2). A computed tomography (CT) scan excluded complications. Given the absence of trauma, drug consumption, and any signs suggestive of Boerhaave syndrome (spontaneous rupture of the esophagus), a spontaneous origin was considered. The patient was successfully managed conservatively with mild analgesia and close clinical monitoring and was discharged on the ninth day of admission.

Spontaneous pneumomediastinum has a higher prevalence

rate among male adolescents with asthma. It typically manifests with sudden pleuritic chest pain, associated with conditions that increase intrathoracic pressure. Physical exercise has previously been described as a trigger for pneumomediastinum and a history of an upper respiratory tract infection has also been linked to this condition. Pneumomediastinum has been reported in inflammatory myopathies.¹ Although there are no reported cases in patients with anti-HMGCR IM, the patient presented with a mild active disease, which made the authors question the inflammatory status as a risk factor.

Pneumomediastinum may present with a normal physical examination, but the presence of subcutaneous emphysema and mediastinal crunching sound on auscultation (Hamman's sign) is highly suspicious, despite being easily mistaken with other pre-cordial sounds. There are other reports where Hamman's sign on auscultation was misinterpreted as a pericardial rub leading to the false assumption of acute pericarditis.²⁻⁴ Pericardial rubs result from the inflammation of the pericardium producing a 'scratchy' sound best heard within the left third intercostal space, leaning forward, after forced expiration. On the other hand, Hamman's sign results from the dissected air during systole, producing a 'crunching' and 'crackling' noise that is synchronous with the heartbeat.⁵ It is noteworthy that within the medical literature, the term 'Hamman's sign/syndrome' may be used to denote both the radiological findings and the clinical syndrome associated with spontaneous pneumomediastinum.

Another complicating factor in the diagnosis is the presence of ECG changes: the slight depression of the inferior PR segment further strengthened the suspicion of pericarditis.

In conclusion, the diagnosis of pneumomediastinum can be challenging. This case emphasizes a frequently forgotten but revealing finding on physical examination: the

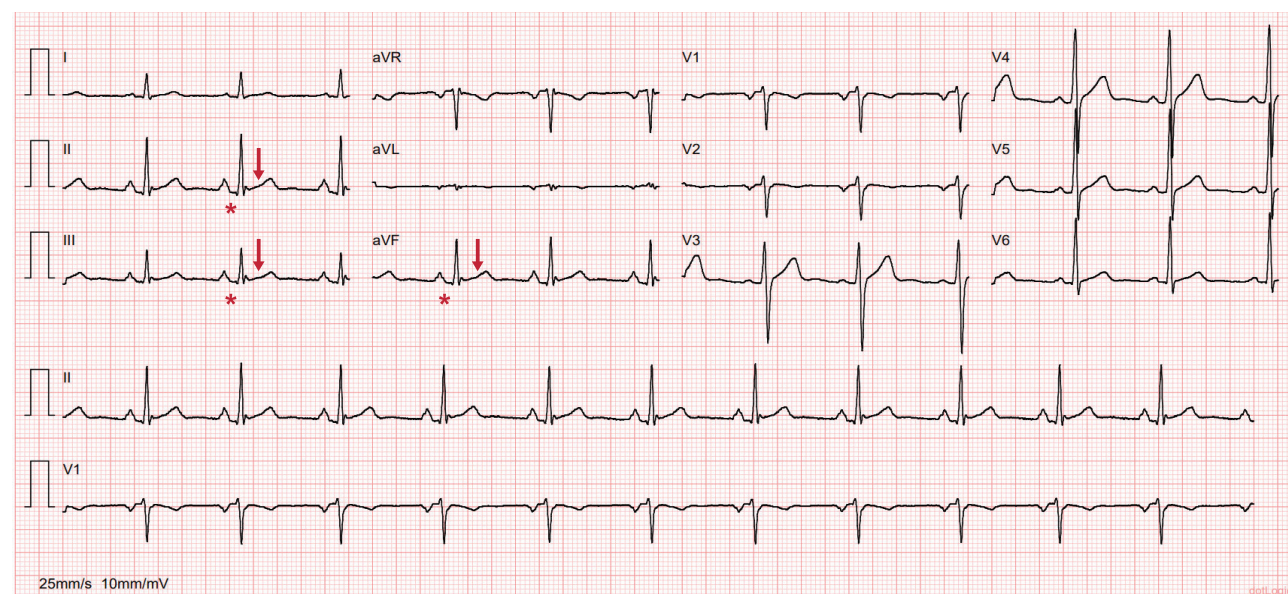


Figure 1 – Electrocardiogram showing slight inferior leads PR depression (*) and early repolarization pattern (arrow)

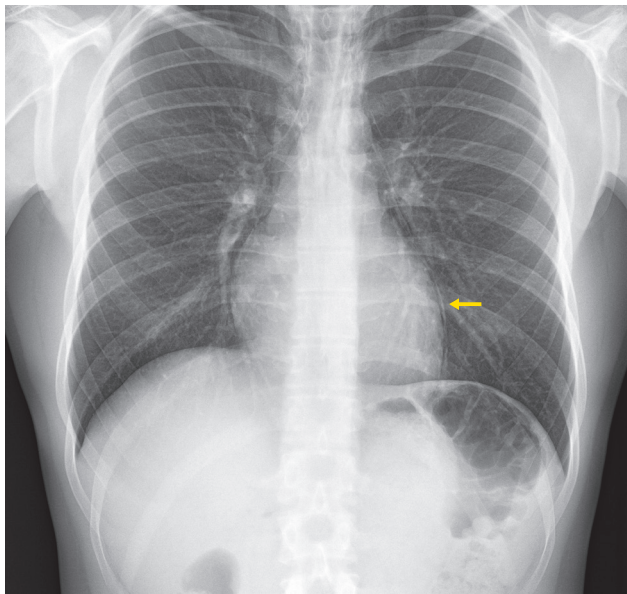


Figure 2 – Radiography of the chest showing pneumomediastinum (yellow arrow)

Hamman’s sign. Also, it highlights the importance of anamnesis and auscultation in the differential diagnosis of chest pain.

AUTHOR CONTRIBUTIONS

MPS, AC, RC: Study design and writing of the manuscript.
MLC, ST: Critical review of the manuscript.
All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients’ data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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