

A legendary chest X-ray

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A healthy 19-year-old male non-smoker presented to our emergency department with symptoms of vomiting, fever, and retrosternal chest pain. The patient's personal and family medical histories were unremarkable. Upon admission, he was alert and oriented, with blood pressure of 115/65 mmHg, heart rate of 90 bpm, respiratory rate of 18 breaths per minute, and peripheral oxygen saturation of 98% on room air. On physical examination, breath sounds were decreased over the left hemithorax. Laboratory tests documented a slight leukocytosis (WBC $10.4 \times 10^9/L$) in absence of increased C-reactive protein value. Ultrasensitive troponin I was in the normal range (7 ng/L, normal value <14 ng/L). Arterial blood gas analysis showed no respiratory abnormalities (pH 7.38; PaO₂ 90 mmHg; PaCO₂ 39 mmHg; HCO₃ 22 mmol/L; lactates 1 mmol/L). An electrocardiogram documented a sinus rhythm at 89 bpm, with a normal ventricular repolarization pattern. A lung ultrasound revealed the absence of lung sliding on the left side, with no identifiable lung point, while an A-line pattern was observed on the right. A chest X-ray was requested, showing a bilateral pneumothorax (pnx).

Question

Given the radiological findings and the patient's clinical history, what is the possible diagnosis?

1. Austrian syndrome
2. Poland syndrome
3. Tieze syndrome
4. Buffalo chest syndrome

Answer

The correct answer is buffalo chest syndrome. The "buffalo chest" is a rare condition in which a simultaneous bilateral pnx occurs due to a communication of both pleural cavities caused by

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an iatrogenic or idiopathic fenestration of the mediastinum.¹⁻⁸ The term "buffalo chest" derives from an old legend in which Native Americans were said to be able to kill a buffalo (or bison) instantly with a single arrow to in the chest, by creating a simultaneous bilateral pnx, due to the animal's peculiar anatomy in which there is one contiguous pleural space due to an incomplete mediastinum.⁸ The pathophysiology is based on the presence of defects or communications between the two pleural cavities, allowing the passage of air or fluid from one hemithorax to the other. Most of the reported cases are of iatrogenic origin, often following the Nuss procedure or cardiac surgery.¹⁻⁷ Out of 47 reported cases, only 6 are spontaneous.⁸ To date, the underlying cause or

pathophysiological mechanism remains unknown, as there is no identifiable personal or family predisposition,⁸ similar to our case. Diagnosis is based on imaging and dynamic testing. A chest X-ray typically usually reveals bilateral pnx, while a chest CT scan can help assess any communication between the two pleural spaces. A definitive diagnosis requires dynamic tests that demonstrate the migration of gas or contrast medium into the contralateral hemithorax after being introduced through a chest drain.⁸ The most clinically relevant complication is the tension pnx, which can lead to rapid clinical deterioration with potentially fatal shock.³

In our case, the patient was immediately treated with an urgent placement of a left-sided chest drainage tube, which led to a significant reduction of the massive pnx. He was then admitted to the thoracic surgery unit. During his hospital stay, a right chest drain was also inserted. Due to a suboptimal clinical response and incomplete re-expansion of the left lung, the patient ultimately required surgical bullectomy and pleurodesis with talc. A chest CT scan was performed and ruled out a potential communication between the two pleural spaces, probably due its very small size. The patient was discharged in good clinical condition after 12 days of hospitalization.

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