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Case Report

When back pain masks a pneumothorax: Atypical presentation in a healthy young nonsmoker male ☆,☆☆

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ABSTRACT

Spontaneous pneumothorax usually presents with sudden chest pain and dyspnea as cardinal symptoms, but its diagnosis may be challenging with atypical presentation. We describe here the case of an unusual presentation of spontaneous pneumothorax in a 20-year-old male nonsmoker with no past medical history, presenting to the emergency department with intense back pain accompanied by vomiting. The diagnosis of spontaneous pneumothorax should be entertained by the clinicians, even in atypical presentations, for timely management.

Introduction

Spontaneous pneumothorax is a medical condition where air accumulates in the pleural space, causing partial or complete lung collapse. It predominantly affects young, tall, and thin males, typically presenting with sudden onset of sharp chest pain and shortness of breath [1]. While these classic presentations are commonly recognized, atypical symptoms can complicate diagnosis. Atypical presentations, such as back pain

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or gastrointestinal symptoms, can draw attention away from the underlying respiratory problem, delaying proper diagnosis and treatment [2].

In this case, we present at a rare case of spontaneous pneumothorax in a healthy young, nonsmoking male who presented with severe back pain and vomiting—symptoms not commonly associated with the condition. This unusual presentation underscores the necessity of considering a broada differential diagnosis, particularly when typical signs such as chest pain or dyspnea are absent. Esophageal perforation would also be in the differential diagnosis, given the gastrointestinal complaints. Clinicians must remain vigilant and suspect spontaneous pneumothorax even in atypical cases or demographics [3].

Early recognition is crucial since spontaneous pneumothorax can escalate to tension pneumothorax, a potentially fatal emergency requiring prompt intervention, such as needle decompression and chest tube thoracostomy [4]. This report aims to highlight the significance of maintaining a broad diagnostic approach and acting swiftly when spontaneous pneumothorax presents atypically, ensuring timely diagnosis and intervention to prevent life-threatening complications [5].

Case presentation

A 20-year-old male nonsmoker with no significant medical history or genetic diseases, standing 160 cm and with a BMI of 29, presented to the emergency department with severe back pain and vomiting. The patient reported that his back pain began suddenly while he was sitting at home and that it was sharp and intense, centered in the mid-thoracic region. Despite the severity of the pain, he denied having shortness of breath, dizziness, or chest discomfort, all of which are common symptoms of acute thoracic pathology. When the patient arrived at the emergency department, he appeared to be in severe pain and clutching his back. His vital signs were as follows: SpO2 level of 96% on room air, blood pressure of 110/60 mmHg, pulse rate of 120 beats per minute, respiratory rate of 26 breaths per minute, and temperature of 36.8°C. Despite the apparent discomfort, he remained alert and focused, providing a detailed history.

The physical examination revealed decreased breath sounds on the right side of the chest and hyperresonance on percussion, indicating an underlying pulmonary issue. No cyanosis or jugular venous distension was observed. Cardiovascular and abdominal examinations revealed normal heart sounds and a soft, nontender abdomen. Notably, the physical examination revealed no abnormalities or deformities that would point to a genetic disease like Marfan syndrome or other collagen disorders. Furthermore, the patient's family history was negative for such diseases. Given the unusual presentation of severe back pain without chest pain, the initial differential diagnoses were musculoskeletal back pain, acute pancreatitis, pyelonephritis, and spontaneous pneumothorax.

Because of the severity of his symptoms and the physical examination findings, a chest radiograph was obtained urgently (Fig. 1). The imaging revealed a large right-sided pneumothorax with a mediastinal shift to the left. The diagnosis of spontaneous tension pneumothorax, characterized by severe back pain but no chest pain, was confirmed.

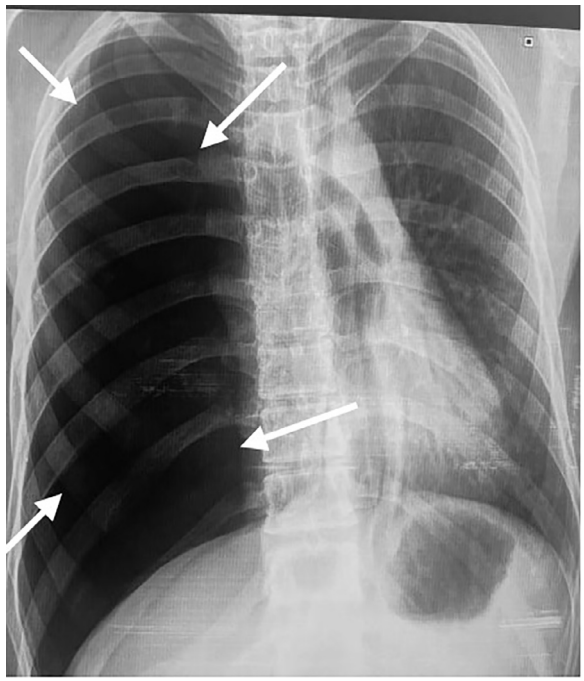

Fig. 1 – Chest radiograph demonstrating a large right-sided pneumothorax. The arrows highlight the absence of lung markings in the right hemithorax, the collapsed right lung is displaced medially, indicative of a tension pneumothorax.

Recognizing the urgency of the situation, the patient was treated immediately with needle decompression to relieve pressure in the pleural space. Following this, a chest tube thoracostomy was performed to allow for continuous air evacuation and lung re-expansion. The procedure was carried out without incident, and the patient reported almost immediate relief from back pain after the intervention.

The chest tube remained in place, and the patient was admitted to the hospital for observation. Over the next 48 hours, the patient's condition stabilized, and the chest tube output gradually decreased. Serial chest radiographs were taken to confirm the resolution of the pneumothorax and the complete re-expansion of the right lung. During this time, the patient was asymptomatic, with no recurrence of back pain or the onset of chest pain.

After careful monitoring and confirmation that there was no further air leak, the chest tube was removed. The patient was given detailed instructions to avoid activities that could cause another pneumothorax, such as heavy lifting or air travel, and was scheduled for a follow-up in the outpatient clinic. Given the risk of pneumothorax recurrence, the patient was advised at discharge to seek immediate medical attention if similar symptoms arose. He expressed understanding and gratitude for the care he received, noting that his initial symptoms had been entirely resolved.

Discussion

Spontaneous pneumothorax is a critical condition that usually manifests as acute chest pain and dyspnoea, making it a well-known emergency in clinical practice. However, atypical presentations, such as the one seen in this case, where the primary symptom was severe back pain, present significant challenges to timely diagnosis and management [6]. This atypical presentation emphasizes the importance of a broad differential diagnosis in patients presenting with acute, unexplained back pain, especially in the emergency department, where the rapid assessment of potentially life-threatening conditions is critical.

The pathophysiology of spontaneous pneumothorax involves the rupture of subpleural blebs or bullae, which allows air to escape into the pleural space and causes partial or complete lung collapse [7]. While this condition is frequently seen in people with specific risk factors, such as tall stature, low body mass index, and a history of smoking, it is also linked to specific genetic conditions, particularly Marfan syndrome and other collagen vascular diseases. Individuals with these conditions are more likely to develop subpleural blebs, increasing the risk of spontaneous pneumothorax. 'However, in this case, the patient was a young, healthy nonsmoker with no known risk factors, making the presentation even more unusual [8]. The absence of typical symptoms, such as chest pain or dyspnoea, may cause a delay in diagnosis. Persistent vomiting can also rarely cause isolated spontaneous pneumothorax, due to increased intrathoracic pressure, as observed in some cases, adding complexity to the differential diagnosis in patients presenting with gastrointestinal symptoms [15].

In this case, the clinical examination was critical in detecting decreased breath sounds on the right side and hyperresonance on percussion, indicating a respiratory cause for the patient's symptoms [9]. Imaging studies, including a chest radiograph, were critical in determining the diagnosis of tension pneumothorax. In this life-threatening Varia, the pressure in the pleural space rises above atmospheric pressure, causing a shift in mediastinal structures as well as a significant respiratory and hemodynamic compromise [10].

Tension pneumothorax is an emergency that requires prompt treatment. To relieve intrapleural pressure and facilitate the collapsed lung's re-expansion, the usual procedure involves needle decompression and chest tube thoracostomy [11]. In this case, early diagnosis and treatment were crucial in achieving a positive outcome and preventing further complications. Following the intervention, the patient recovered without incident, demonstrating the efficacy of the established treatment protocols when followed on time [12].

This case also raises important considerations for clinical practice. It highlights how crucial it is to take spontaneous pneumothorax into account when making a differential diagnosis of acute back pain, particularly in cases where respiratory symptoms like reduced breath sounds or hyperresonance are evident. Furthermore, it emphasizes the necessity of prompt imaging when a pneumothorax is suspected because an early diagnosis has a direct impact on the effectiveness and speed of treatment [13]. This case highlights the significance of clinical vigilance and the need for a systematic approach to the assessment of patients with acute pain, even when it does not initially suggest a thoracic origin [14]. This is because tension pneumothorax has the potential to deteriorate, especially in atypical presentations rapidly.

Conclusion

Spontaneous pneumothorax can cause atypical symptoms such as severe back pain. A high level of suspicion is required for early diagnosis, particularly in atypical presentations.

Tension pneumothorax requires prompt treatment with needle decompression and chest tube placement. This case report demonstrates the variability in clinical presentations of spontaneous pneumothorax and the importance of comprehensive clinical evaluation and timely intervention.

Patient consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

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