

CASE REPORT

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Atypical presentation of a large pneumothorax in a young male: A case report

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ABSTRACT

Introduction: Pneumothorax is a potentially dangerous condition that, if not properly recognized and treated, can have fatal consequences. Chest discomfort or difficulty breathing is common presenting symptoms. We present an atypical presentation for pneumothorax.

Case Report: A 26-year-old male patient presented to the emergency department (ED) with complaints of pain in the right iliac fossa with localized rebound tenderness. The treating physician ordered a computed tomography (CT) abdomen to assess for acute appendicitis. From the abdominal CT scan, the radiologist reported a significant right-sided pneumothorax. The patient was treated with a chest thoracostomy and had an unremarkable recovery.

Conclusion: All alternative diagnoses are considered in light of the patient's complaint and clinical presentation. This case reminds physicians of possible atypical clinical presentations of common and serious diseases.

Keywords: Appendicitis, Missed diagnosis, Pneumothorax, Referred pain

How to cite this article

Akeely YY, Alenezy AS, Al Marzouqi SM, Bokhari N, Yousef M. Atypical presentation of a large pneumothorax in a young male: A case report. Case Rep Int 2022;11(2):11–15.

Article ID: 100110Zo6YK2022

doi: 10.5348/100110Zo6YA2022CR

INTRODUCTION

The presence of air between the parietal and visceral pleural spaces is known as pneumothorax. A pneumothorax can have significant consequences and can even lead to cardiac arrest if not discovered and treated quickly [1, 2].

A missed diagnosis in the emergency department can be significant, and can be due to multiple factors [3]. Atypical and unexpected presentations of common illnesses are one of these factors [4]. At times, the patient's impression of pain and its location may be erroneous [5]. There are several case reports in the literature of unusual presentations of common illnesses [6–9]. For instance, subsegmental pulmonary embolism was detected in patients who presented with upper abdomen discomfort [10]. A patient with eosinophilic esophagitis also complained of flank discomfort, and the ultimate diagnosis was esophageal rupture [11].

Theoretical causes for such odd and abnormal presentation of common illness include referred pain and neuroanatomy [5, 12]. A single ascending route connects a collection of neurons from different organs, and as a result, the patient may report of discomfort at an area other than the primary disease. This causes the clinician to focus on various parts of the body and investigate alternate diagnoses, which results in the clinician

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Received: 03 July 2022

Accepted: 21 September 2022

Published: 13 October 2022

potentially missing the correct diagnosis. For example, pulmonary embolism has been noted to cause abdominal pain in 11% of cases [13].

In this case, we report a young patient who has an atypical presentation of a massive pneumothorax. To the best of our knowledge, no case report in the literature describes such a presentation.

CASE REPORT

A 26-year-old man arrived at our emergency department with complaints of abdominal pain, mainly in the right iliac fossa. He has no medical history and has no previous surgeries. He smokes cigarettes, but does not use drugs. He is not on any medications. In the triage area, the vital signs were as follows: blood pressure (BP) 118/73, temperature 36.4°C, heart rate 90 beats per minutes, respiratory rate 20 breaths per minute, and saturation of 100%. The patient is 179 cm tall and weighs 63 kg.

The patient reported a dollar pain for two days associated with nausea. There was no history of fever, difficulty breathing, or pleuritic chest pain. The patient was fully conscious and oriented. He was not in respiratory distress, cyanotic, or jaundiced upon examination. Because of the pain, he was clutching his abdomen with his hands. During abdominal palpation, he had localized rebound tenderness in the right iliac fossa at McBurney's point. The patient had an occasional cough, so a COVID-19 swab was performed, which came back negative. Cell count and differential, a comprehensive metabolic panel, urine dipstick, and CRP (C-reactive protein) were within normal limits (Table 1).

Table 1: The laboratory results for the patient

WBC	8.2
Hb	13.7
PLT	251
Sodium	144
K	4.0
Urea	2.8
Creatinine	81
COVID-19 PCR	Negative

WBC: white blood cell; PLT: platelet, HB: Hemoglobin; PCR: polymerase chain reaction.

A computed tomography (CT) scan abdomen was ordered to assess for appendicitis. While reviewing the CT image, the radiologist noticed large right-sided pneumothorax. They immediately contacted the treating physician in light of this unexpected finding (Figures 1 and 2). The CT report stated that there was a large pneumothorax with a leftward mediastinal shift. Two hepatic lesions (2.8×3.7 cm and 2.22 cm) with thick peripheral nodular enhancement and central

hypodensity are seen in segments 2 and 4. The rest of the exam was unremarkable. There was no appendicitis.

A tube thoracostomy was performed. Figure 3 shows the chest X-ray post-tube insertion. The patient was

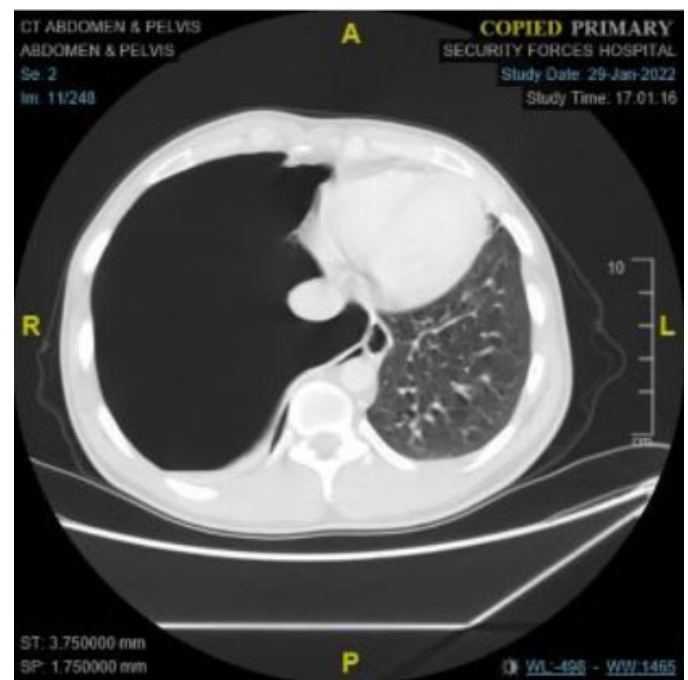


Figure 1: The CT scan of the patient's upper abdomen which shows large pneumothorax pushing the mediastinum to the left side. This is the first CT abdomen which was ordered to rule out appendicitis.

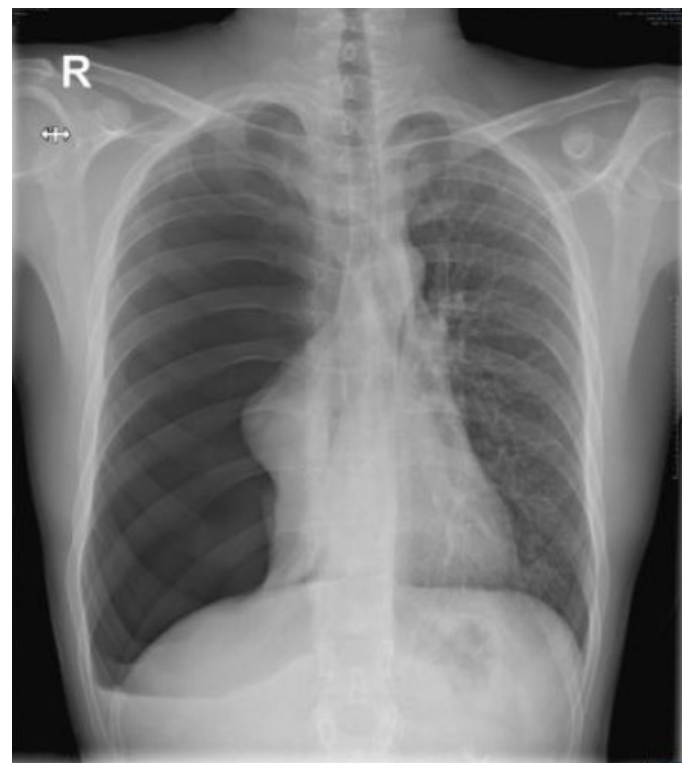


Figure 2: Chest X-ray done for the patient after the CT abdomen finding of the right sided large pneumothorax.



Figure 3: Chest X-ray post-chest tube insertion.

admitted to the surgical ward for monitoring and further care under thoracic surgery.

A CT chest was ordered to assess for any bullae. The CT revealed a chest tube in the right lower lobe at the superior segment, causing mild subcutaneous surgical emphysema. There was still a large right pneumothorax. There is right apical bulla measuring 0.7×2 cm. The trachea and major airways were patent, and there were small bilateral pleural effusions and bibasilar atelectasis. As a result, the patient underwent a thorascopic bullectomy and pleurodesis surgery.

The biopsy report of the right upper lung lobe wedge resection noted lung tissue with subpleural bullae adjacent chronic inflammation with eosinophiles and mild fibrosis of the pleura. The biopsy report of the right parietal pleural excision noted fibrosis tissue with reactive mesothelial changes. The patient was discharged a few days later in a stable condition, with a follow-up outpatient clinic appointment. The last chest X-ray before discharge, as shown in Figure 4.

DISCUSSION

Pneumothorax can be fatal if it is not diagnosed and treated in a timely manner. This case could have gone unnoticed if the CT scan had not included the lower chest. Missing such diagnosis could have resulted in a serious and life-threatening situation [14].

Pneumothorax is diagnosed through a history and physical examination that typically includes pleuritic chest pain and or shortness of breath. There can be decreased air entry and hyper-resonance on percussion in the affected area. A large pneumothorax with tension physiology may result in tracheal deviation and create hemodynamic instability as a result of the increased pressure on the heart and decreased venous return [15, 16].



Figure 4: Chest X-ray on the day of patient's discharge.

There are numerous examples of common diseases reported with atypical presentations in the medical literature. In one of these cases, after a few days of worsening symptoms, a patient was admitted to the hospital with community-acquired pneumonia, and the final diagnosis was confirmed to be perforated subhepatic appendicitis with abscess collection [17]. In another case, the patient reported chest pain with ischemic electrocardiogram (ECG) changes, and was later diagnosed with a perforated viscus [18].

In one study, the following risk factors for spontaneous pneumothorax were identified: male, a mean age of 24 ± 6 years, smoking, a mean body mass index (BMI) of 19.2 ± 3.8 kg/m², and a height of 171 ± 8 cm [19]. Our patient is a smoker, 179 cm tall, 63 kg weight, and has a BMI of 19.7.

One study trying to assess if a chest X-ray should be ordered for every patient complaining of abdominal pain, ordered a chest radiograph on all patients admitted to the surgical ward (344 patients) for abdominal pain. The results revealed that 7% had a new finding and 1% had air under the diaphragm, respectively [20]. As a result, the vast majority of the X-rays that were requested were normal. This study supports the need to look for other causes of abdominal pain outside the abdomen if there are any abnormal findings on the exam or if there is no clear explanation for the patient's symptoms.

CONCLUSION

The importance of early diagnosis of pneumothorax cannot be overstated. The majority of the time, it manifests as typical complaints that can be diagnosed

and treated accordingly. Unfortunately, in rare instances, the presentation may be atypical.

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Acknowledgment

The authors thank Dr. Gary Vilke for editing the manuscript.

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Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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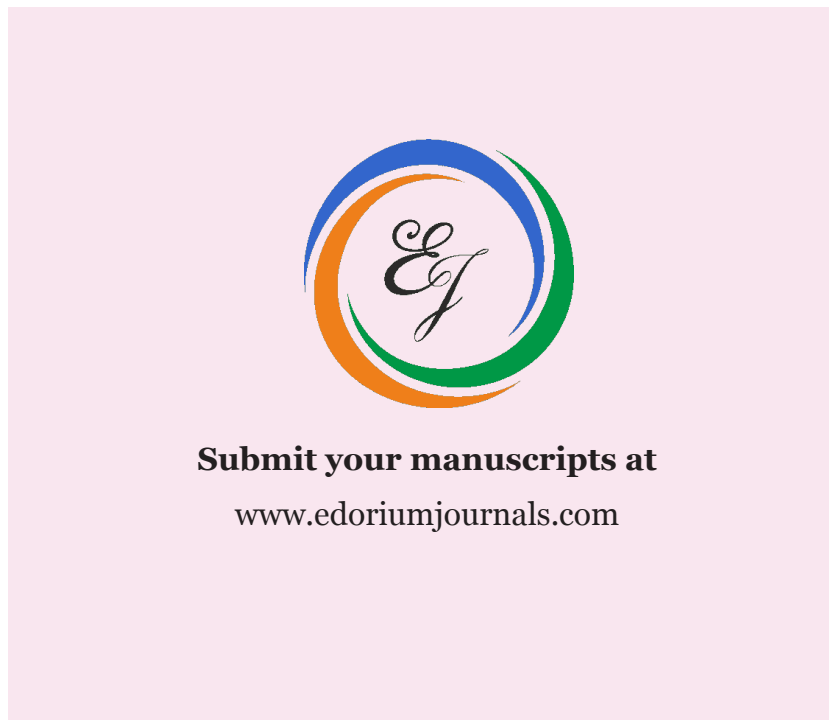
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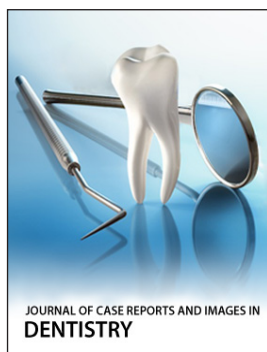
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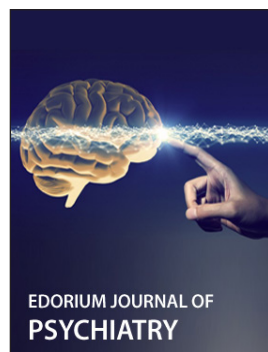
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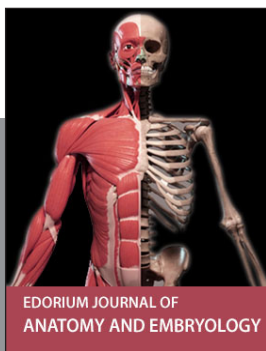
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