

CASE REPORT

Spontaneous Pneumothorax and Pneumomediastinum after a Trivial Injury: A Case Report

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ABSTRACT

Spontaneous pneumothorax and pneumomediastinum is defined as presence of free air or gas in the pleural cavity and mediastinal structures respectively. Spontaneous pneumothorax seems to be associated with anatomical abnormalities such as subpleural blebs or bullae, however not for spontaneous pneumomediastinum which may developed without an apparent precipitating cause. Both usually may occur in young healthy adults without serious underlying lung disease. We report a case of spontaneous pneumothorax and pneumomediastinum after a trivial injury. He was initially presented with dyspnea after two weeks of initial trivial trauma. Chest radiograph showed left apical pneumothorax with pneumomediastinum with no evidence of rib fracture. His condition was deemed non-traumatic by surgical colleague, thus admitted to medical ward for observation and eventually discharged well.

Keywords: Pneumomediastinum, Spontaneous pneumothorax

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INTRODUCTION

Spontaneous pneumothorax is not a rare occurrence especially in tall and thin individual with lung bleb at the apices. Severe trauma not only can cause pneumothorax, but also pneumomediastinum, where the air entered the mediastinal space. The impact of the trauma must be severe enough to cause a tear across the thickness of the chest wall and structures lining the mediastinal spaces. These includes motor vehicle accident, fall from a tall building, or mechanical crush injury. Iatrogenic pneumomediastinum is treated with drain insertion, which is a common practice following open chest surgery. We are describing a case of spontaneous pneumothorax and pneumomediastinum which were treated conservatively.

CASE REPORT

A 19-year-old gentleman, with no known illness, whom active smoker five cigarettes per day for past two years. He presented initially to general practitioner following a one-day history of dyspnea and chest discomfort associated with hoarseness of voice and odynophagia. He gave a history of a fall during a futsal play two weeks

prior to presentation, whereby he fell down onto his right side of body but denies any significant trauma to his chest; he was asymptomatic after that incident. Initial chest radiograph showed left apical pneumothorax and thus referred to hospital (Figure 1).

On arrival, clinically he was not in distress with good oxygen saturation under room air with stable vital signs. His height was 160 centimeters tall with no other features to suggest Marfan syndrome. Chest spring was negative. Noted subcutaneous emphysema at around neck. Lungs examination revealed equal breath sound with no added sound. Precordial examination revealed no murmur or muffled heart sound. He was initially referred to surgical and otorhinolaryngologist colleague for suspected traumatic pneumothorax and for hoarseness of voice.

Repeated chest radiograph reported as small left apical pneumothorax with no evident of rib fracture, thus he was discharged by surgical team as no active intervention from them. Otorhinolaryngology assessment including flexible nasopharyngolaryngoscopy revealed normal vocal cord with no obvious tracheal injury and he was treated as allergic rhinitis with upper respiratory tract infection. Eventually patient admitted to medical ward for observation.

Patient remained asymptomatic in ward and did not require any oxygen support. Clinically, subcutaneous improving. Computed tomography (CT) scan of

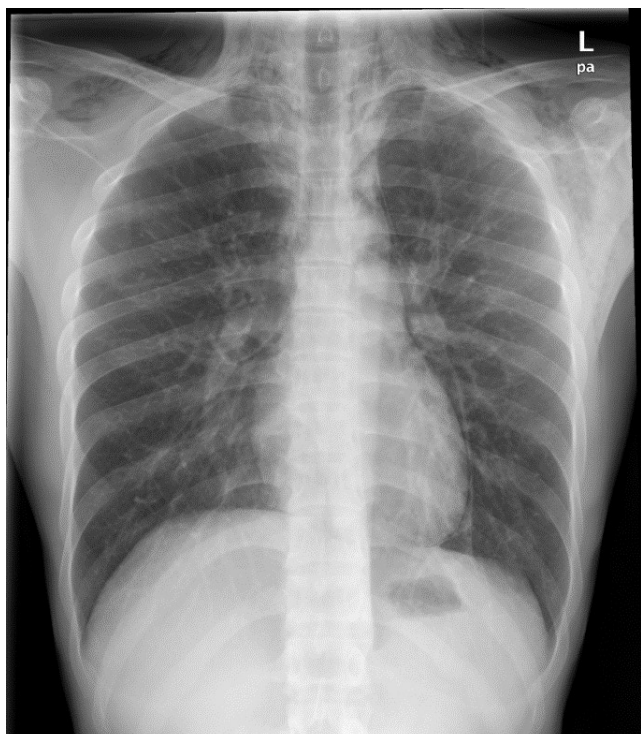


Figure 1: Chest Radiograph. Left apical pneumothorax with air-shadow highlighting the left mediastinal border and cardiac silhouette, indicating pneumomediastinum. Air shadows over bilateral sides of the neck (left more than right) indicating subcutaneous emphysema.

thorax revealed left apical pneumothorax with pneumomediastinum and extensive subcutaneous emphysema at cervical region with neither evidence of tracheo-bronchial nor esophageal injury, or any subpleural blebs or bullae (Figure 2). However, the CT scan did find a hairline fracture at right first rib which does not fully explained the location as well as extension

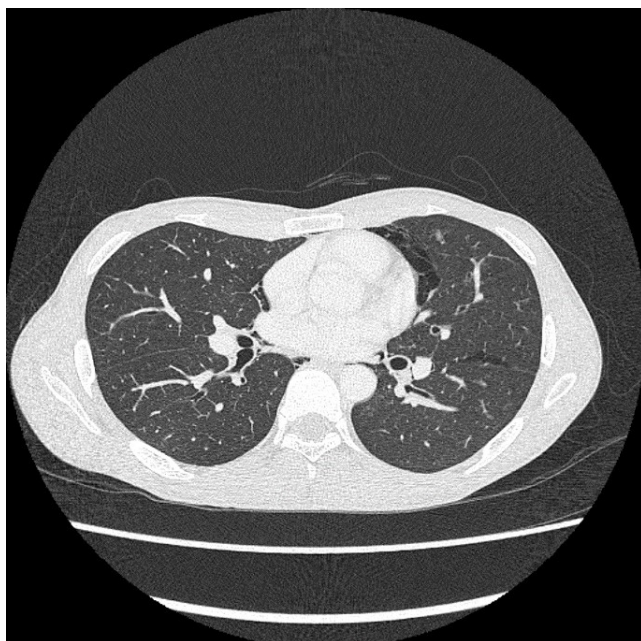


Figure 2: Axial cut of CT thorax in lung window. Thorax computed tomography scan showed pneumomediastinum over left cardiac border with intact lung parenchyma and absence of oesophageal or bronchi abnormalities.

of the pneumothorax and pneumomediastinum.

There was no cardiothoracic surgery intervention. Repeated chest radiograph on Day-6 of admission showed resolution of subcutaneous emphysema and pneumothorax, with resolving pneumomediastinum (Figure 3). He was discharged well and advised to stop smoking.

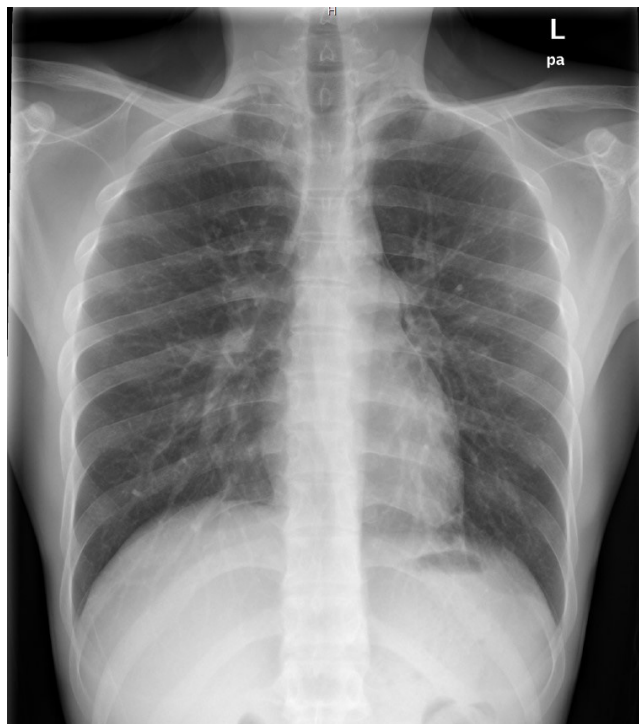


Figure 3: Chest Radiograph. Chest radiograph on Day-6 of admission showed complete resolution of pneumothorax and subcutaneous emphysema, and resolving pneumomediastinum.

DISCUSSION

Pneumothorax and pneumomediastinum is defined as presence of free air or gas in the pleural cavity and mediastinal structures respectively. Both can be categorized as spontaneous or traumatic. A primary spontaneous pneumothorax (PSP) is a pneumothorax that occurs without any precipitating event or underlying lung disease, same goes to primary spontaneous pneumomediastinum (SPM). Like spontaneous pneumothorax, spontaneous pneumomediastinum tend to occur in males with a tall and thin body habitus (1). PSP has been associated with ruptured of subpleural blebs or bullae and known risk factor includes cigarettes smoking. Whereas, SPM was associated with ruptured of alveoli and the air leaks to surrounding bronchovascular structures (2-3). Both can present with dyspnea and pleuritic chest pain but with additional pneumomediastinum symptoms includes cough and odynophagia in which all those symptoms were present in this case report.

Detailed history taking is mandatory in order to determine potential triggers. Cigarette smoking is

a known risk factor for PSP and it was present in our patient. However, it might be difficult to justify the extent of the current condition (both PSP and SPM) with the amount of cigarette smoking in which it was relatively small amount.

History of injury two weeks prior symptoms development with evidence of hairline right rib fracture from CT thorax also did not fully explained this condition. Furthermore, patient was asymptomatic after trauma and only developed symptoms later. Thus, spontaneous pneumothorax and spontaneous pneumomediastinum best describes the provisional diagnosis rather than traumatic cause.

Diagnosis usually can be established from chest radiograph, by detection of air or gas in pleural cavity or surrounding mediastinal structures. Indirect radiographic evidence of both pneumothorax and pneumomediastinum were presence of subcutaneous emphysema. As illustrated earlier, initial chest radiograph for had all these features in this case report. Other important features that not to be missed from chest radiograph includes pleural effusion which may indicate esophageal perforation, foreign body, air trapping, or lung parenchymal diseases.

Treatment for pneumomediastinum if uncomplicated includes rest, analgesia, and avoidance of maneuvers that increases pulmonary pressure. Whereas for spontaneous pneumothorax includes oxygen supplementation with or without needle aspiration or chest tube insertion. In this case report, patient was diagnosed to have small left apical spontaneous pneumothorax (pneumothorax size less than two centimeters) and spontaneous pneumomediastinum. Thus, patient was managed with observation only as he was also asymptomatic.

CONCLUSION

Spontaneous pneumothorax and pneumomediastinum can occur in the same setting in which may be subtle and difficult to diagnose. Relevant detailed clinical history, high index of suspicious and focused attention to subtle chest radiograph findings might lead to the diagnosis. Although pneumomediastinum carries significant complication with heterogenous aetiologies, in selected uncomplicated cases, conservative management can lead into spontaneous recovery, thus avoiding the need of invasive surgical intervention.

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