

Case Report

Spontaneous Pneumomediastinum in a Young Gentleman

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Abstract — Spontaneous pneumomediastinum (SPM) is defined as presence of free air or gas in the mediastinum. It may occur in young healthy individuals without serious underlying lung disease. SPM is a rare presentation at the Emergency Department; it typically occurs among tall and thin individuals. We report a case of spontaneous pneumomediastinum in a gentleman who presented with a short history of chest and neck pain after coming back from work. Neck radiograph showed neck subcutaneous emphysema and chest radiograph showed pneumomediastinum with no evidence of pneumothorax or rib fracture.

Keywords — spontaneous pneumomediastinum; subcutaneous emphysema of neck

I. INTRODUCTION

Non-traumatic chest pain is a common symptom in adolescents and is a frequent complaint among patients presenting to the Emergency Department. Like spontaneous pneumothorax, SPM mainly affects adolescent males with a tall and thin body habitus. The common presenting complaints for pneumomediastinum are chest pain, dyspnoea and cough while the less common symptoms include neck pain, odynophagia and dysphagia [1]. Emesis is reported to be the primary initiating event for SPM in a third of patients, followed by asthma and cough. Additional triggering episodes that are less frequent include physical activity, defecation and choking [2].

Evaluation of patients with SPM is aimed to assess potential triggers, exclude other causes of presenting symptoms and evaluate for complications. We describe a case

of SPM and neck subcutaneous emphysema which were treated conservatively.

II. CASE REPORT

A 22-year-old Chinese gentleman with no known medical illness presented to the Emergency Department (ED) following a one-day history of central chest and neck pain. The pain was sudden in onset, starting at approximately 11pm after he came home from work. He denied any neck or chest trauma, voice changes, haemoptysis, or protracted cough. He worked as a cook and denied smoking or other high-risk behaviour.

Upon arrival to the ED, he was not in distress with good oxygen saturation under room air and stable vital signs. His height was 174cm and he weighed 62kg. Chest spring was negative. Physical examination revealed presence of

subcutaneous emphysema over the right side of his neck, localised over the sternocleidomastoid area. There was no crepitus over his chest, arm or abdomen. Examination of his lungs revealed equal breath sounds with no added sound. Precordial examination revealed S1 and S2 with no murmur.

An electrocardiogram was performed and showed sinus rhythm. Chest radiograph (Fig. 1) showed presence of pneumomediastinum. No pneumothorax or rib fracture detected. Cervical radiograph (Fig. 2) revealed air pockets in the soft tissue of the neck, consistent with subcutaneous emphysema. Computed tomography (CT) scan of the neck and thorax (Fig. 3 A, B, C) confirmed the findings of pneumomediastinum and subcutaneous emphysema at the neck. No tracheal or bronchial injury detected.

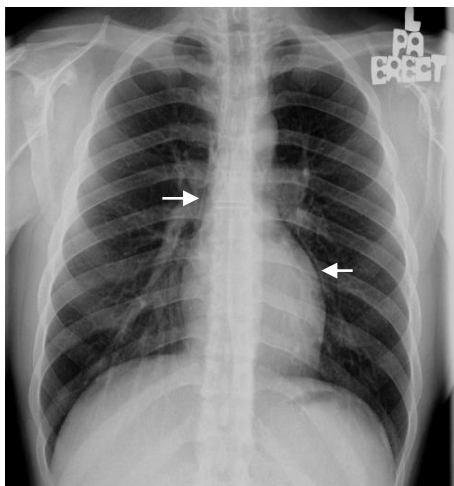


Fig. 1 Chest radiograph in PA erect view showed presence of pneumomediastinum (arrows).

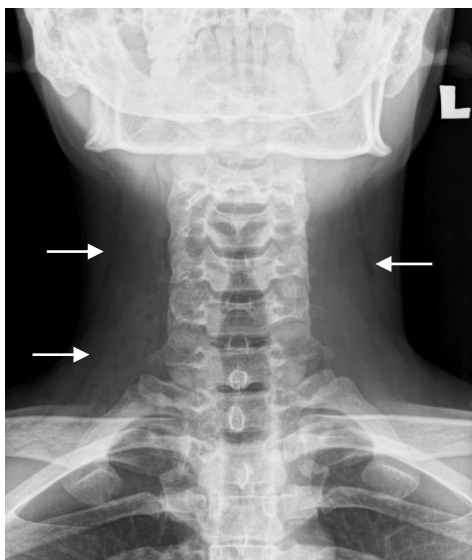


Fig. 2 Cervical radiograph in the AP view showed air pockets in the soft tissue of the neck (arrows), consistent with subcutaneous emphysema.

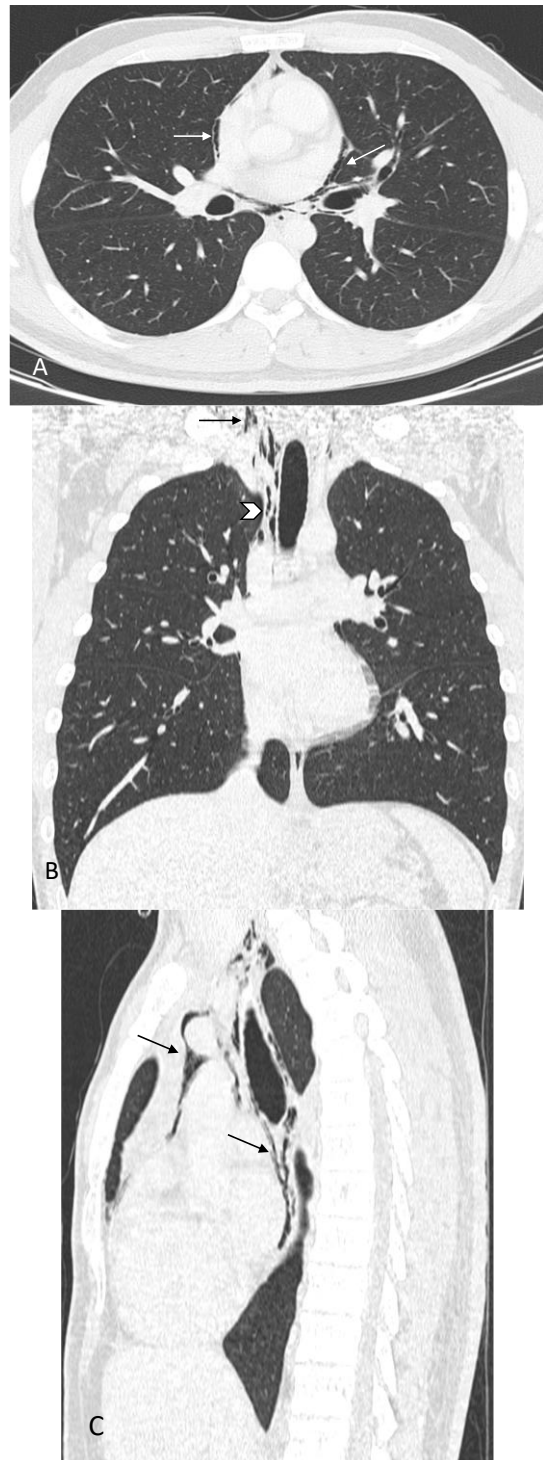


Fig. 3 CT scan in the axial view (A) confirmed presence of pneumomediastinum (arrows). The pneumomediastinum was also well-demonstrated in the coronal (B, arrowhead) and sagittal (C, arrows) views. There was subcutaneous emphysema in the neck (arrow), demonstrated in the coronal view (B).

III. DISCUSSION

Pneumomediastinum is defined as presence of free air in the mediastinum. Spontaneous pneumomediastinum (SPM) is pneumomediastinum that occurs without any precipitating event or underlying lung disease and tends to occur in males with a tall and thin body habitus [3]. The incidence of SPM is approximately 1 per 7000 to 12000 hospital admission. SPM typically develops due to ruptured alveoli with penetration of air into the surrounding bronchovascular structures [4]-[5]. Patients may present with dyspnoea and pleuritic chest pain. Physical examination is critical in the early detection of SPM as seen in this case where there was presence of subcutaneous emphysema over the neck region. Approximately half of SPM cases is detected by physical examination. [6][7].

Detailed questions regarding the predisposing factors for pneumomediastinum should be asked when obtaining the clinical history. These include asthma or other underlying lung disease, vigorous vomiting or coughing, unrecognised trauma and drug intake [8]. However, in this case, the patient presented without any known triggering factors. Subcutaneous emphysema is a suggestive sign of pneumomediastinum as it is moderately sensitive and highly specific for SPM [9], and is usually detected in the neck or precordial area.

Radiological features of pneumomediastinum rely on the appearance of mediastinal structures that are outlined by the free air and may appear similar to medial pneumothorax and pneumopericardium [10]. CT has been shown to increase diagnostic sensitivity of pneumomediastinum and to exclude underlying pulmonary diseases [11]. In this case, both the chest radiograph and CT were diagnostic.

Treatment for benign SPM is mainly conservative with analgesia, rest, and avoidance of manoeuvres that increase pulmonary pressure and activities that predispose to barotrauma such as scuba diving. It may resolve without consequences within 2 to 15 days [6][12]. Prompt diagnosis of SPM is very important to prevent serious complications such as oesophageal perforation, tension pneumothorax and pneumopericardium. As for this patient, no known trigger was discovered. Thus, he was managed conservatively and made a full recovery.

IV. CONCLUSIONS

SPM and subcutaneous emphysema can occur in the same setting, however their findings might be subtle and therefore difficult to diagnose. An integration of detailed clinical history, high index of suspicion and focused attention to subtle chest radiograph findings will aid in the diagnosis. Pneumomediastinum may lead to several complications such as tamponade, airway compression and pneumothorax. In uncomplicated cases, conservative management can lead to spontaneous recovery, thus avoiding the need of invasive surgical intervention.

CONSENT TO PARTICIPATE

Written informed consent was obtained from the patient for the case study to be published in this article.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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