Spontaneous Pneumothorax during Lifting of Heavy Object: A Case Report

Fulsen Bozkus1* and Muhammet Sayan2
1Department of Chest Diseases, Faculty of Medicine, Kahramanmaras Sutcu Imam University, Turkey
2Department of Thoracic Surgery, Faculty of Medicine, Kahramanmaras Sutcu Imam University, Turkey

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Introduction

Primary Spontaneous Pneumothorax (PSP) is the accumulation of air into the pleural space without any obvious history of trauma or underlying lung disease and/or radiologically evident lung lesion [1,2]. Rupture of subpleural bullae or blebs are believed to be the cause of PSP. It is often seen in smoker young male [3]. We present a case of PSP without any known underlying risk factors that followed lifting of a heavy object during his routine daily activity. Since it is rare, we are reporting it and suggesting that this clinical condition should be kept in mind.

Case Report

A 24-year-old, non-smoker man who runs a textile factory was admitted to the emergency department with sudden onset of shortness of breath and front chest pain. On questioning, the patient admitted that he was lifting a heavy object during his daily work at the factory. His past medical history was unremarkable. On physical examination he was conscious, cooperative and oriented to time and place. Arterial blood pressure was 120/80 mm Hg, pulse rate, 110 beats / min, respiratory rate, 28 / min and peripheral oxygen saturation was 91%. Breath sounds were decreased over his right chest. Other systems examination was unremarkable. Since the patient presented in the emergency department with sudden chest pain and shortness of breath, computed tomography (CT) of thorax was performed for a possible pulmonary embolism. It revealed right sided pneumothorax (Figure 1). Sedo-analgesia was applied and chest tube drainage was performed in the emergency department. Active air outlet was observed on tube thoracotomy. Control X-ray chest showed re-expansion of the lung. Patient was admitted to the thoracic surgery service. Follow-up complications were not observed and the patient was discharged on day 5 of admission.

Discussion

Spontaneous pneumothorax is divided into two main groups, namely primary spontaneous pneumothorax (PSP) and secondary spontaneous pneumothorax (SSP) [4]. The most common cause of PSP is rupture of the apical sub pleural blebs [3]. Patients, who develop PSP, are often young, tall and slim men. High negative apical pleural pressure is the main reason for the development of PSP [4]. But our patient was medium-sized and normal-weighted. SSP is caused by underlying lung disease such as chronic obstructive pulmonary disease (COPD), tuberculosis, AIDS, sarcoidosis, pneumonia or cystic fibrosis. In our case there was no history of any underlying lung disease albeit he suffered from influenza about a week back.

Spontaneous pneumothorax usually presents with sudden shortness of breath, dry cough and chest pain as was the case in the present patient. Auscultation is very important for initial evaluation [5]. The most valuable test in terms of diagnosis is a standing postero-anterior (PA) view chest X-ray [6] but in patients with normal chest X-ray due to minimal pneumothorax, CT thorax is more sensitive. However, in this case pulmonary embolism was suspected initially and hence a CT thorax was performed before any chest X-ray. In 89% of the cases, blebs and bullae localized apically to upper lobe are usually seen on CT [7]. In our case, CT scan did not show any blisters or blebs.

Figure 1: A large right-sided spontaneous pneumothorax.
Sudden and sharp movements may sometimes lead to development of PSP. In a series of 219 cases, Bense et al, reported that more than 87% of patients were found to be physically inactive at the onset of symptoms and only 9% of patients had a history of sudden movement such as tying the seat, during the onset of symptoms [8]. Such cases of spontaneous pneumothorax during heavy weight lifting may be related to improper breathing technique [9,10]. Aydin et al, and Bense also reported cases with PSP that developed during lifting of heavy objects [11,12]. We also believe that in our case, PSP developed during lifting/loading of heavy object.

Spontaneous pneumothorax, a benign, self-limiting condition and is being currently treated either using conservative options, like chest-tube drainage, or surgically, by thoracotomy and/or video assisted thoracoscopic surgery (VATS) [13,14]. Chest tubes are inserted to drain the pleural cavity of air and fluid, underwater seal which is composed of an underwater seal container, connector line to chest tube and allows one way movement of air and liquid from the pleural cavity [15]. In this case, we performed chest-tube drainage but VATS is being increasingly used to treat recurrent or persistent primary spontaneous pneumothorax. Compared to thoracotomy, VATS has benefits of less postoperative pain, better wound cosmetics, shorter hospital stay and duration of drainage, better functional recovery, better short- and long-term patient satisfaction, and equivalent cost-effectiveness [16].

Although PSP occurring during physical activity is encountered infrequently, it should be kept in mind.

References


*Corresponding author: Fulsen Bozkus, Faculty of Medicine, Sutcu Imam University, Avsar Campus, 46050, Kahramanmaras, Turkey, E-mail: fulsenbatmaz@gmail.com.

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