Simultaneous Bilateral Spontaneous Pneumothorax: A Case Report

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Spontaneous pneumothorax is relatively common in clinical practice and occurs more frequently in young, tall thin men, and in smokers. However, simultaneous bilateral spontaneous pneumothorax is a rare clinical condition that often presents with significant respiratory distress. We report a case of simultaneous bilateral spontaneous pneumothorax in a 41-year-old woman who presented with chest pain and a dry cough followed by mild dyspnea for two weeks. She received simultaneous bilateral tube thoracostomies and video-assisted thoracoscopic surgery during hospitalization. She was discharged in relatively good condition on the 23rd hospital day.

Key words: simultaneous, bilateral, spontaneous pneumothorax

Introduction

Spontaneous pneumothorax is a relatively common condition that occurs most often in slender young men¹. The overall male to female ratio is 5:1². The higher incidence in men has been attributed to higher rates of smoking, body habitus and different mechanical properties of the lungs³. However, simultaneous bilateral spontaneous pneumothorax (SBSP) is a very rare clinical condition with an occurrence ranging from 1.3 to 1.9% of all cases of spontaneous pneumothorax⁴⁵. SBSP can be fatal once it progresses into tension pneumothorax⁴⁵. SBSP is mainly seen in patients with chronic obstructive pulmonary disease, tuberculosis, pneumonia, undefined interstitial pulmonary disease, connective tissue disease and pulmonary metastasis⁶. We report a case of SBSP in a 41-year-old woman. She received simultaneous bilateral tube thoracostomies. Prompt diagnosis and tube thoracostomy are necessary for patients in this condition, which can be life-threatening. Bilateral video-assisted thoracoscopic surgery is a safe procedure in the treatment of spontaneous bilateral pneumothorax.

Case Report

A 41-year-old woman presented to the emergency department (ED) with chest pain, and a dry cough followed by mild dyspnea for two weeks without treatment. She was referred from a clinic for further evaluation and management. There was no relevant personal, psychiatric, or traumatic history or any underlying lung disease. She was not a smoker. On arrival, she had a blood pressure of 130/80mmHg, pulse rate of 106/min, respiratory rate of 22/min, and body temperature of 36.7°C.
Her oxygen saturation was 96% on room air, and 99% with an oxygen mask at a flow of 8L/min. On examination, the patient was having some difficulty breathing, with decreased breath sounds bilaterally. No other abnormalities were found on physical examination. Arterial blood gas analysis revealed pH 7.40, PaO₂ 86.5mmHg, PaCO₂ 34.3mmHg, HCO₃⁻ 21.8mEq/L, BE -2.4mEq/L, and Sao₂ 96.5%. Complete blood count and biochemistry results were within normal limits. A 12-lead electrocardiogram showed sinus tachycardia with a rate of 110 beats/min and no ST-T changes. Chest radiography showed bilateral pneumothorax which was more prominent on the right side (Figure).

On the basis of the radiographic findings, two emergency physicians simultaneously performed bilateral tubal thoracostomies. Subsequently, her chest discomfort and dyspnea improved. A chest surgeon was consulted and the patient was admitted to ward. Her left-side pneumothorax persisted, and computed tomography of the chest showed that the left lung was not fully expanded. It remained unresolved after 10 days. Video-assisted thoracoscopic surgery was therefore done. Blebs at the apices of both upper lungs were found, and multiple wedge resections with apical partial pleural abrasion was performed bilaterally. She had an uneventful recovery postoperatively. Histopathological examination revealed emphysematous blebs with septal fibrosis. She was discharged without complications on the 23rd hospital day. There was no recurrence at 6 months follow up.

**Discussion**

Spontaneous pneumothorax is an abnormal collection of air in the intrapleural space without preceding trauma. If pneumothorax enlarges, the lung becomes contracted with decreasing vital capacity and thus a decreasing partial pressure of oxygen. Although young, healthy people can tolerate these changes fairly well, older people and those with underlying lung disease often have significant respiratory compromise. Spontaneous pneumothorax is a relatively common condition in
clinical practice. It is generally ascribed to rupture of an intrathoracic gas-containing structure. Air enters the pleural space when a subpleural apical bleb or a pulmonary cavity ruptures. It remains a significant health problem. However, more is now known about its pathogenesis, there have been improvements in diagnostic procedures and both medical and surgical approaches to treatment. The most common symptoms of spontaneous pneumothorax are chest pain on the side of the pneumothorax and dyspnea. The chest pain is sharp and pleuritic. The clinical presentation of SBSP varies widely. Patients have presentations ranging from tension pneumothorax, and cardiopulmonary failure to mild dyspnea. Physical signs range from a slight decrease in breath sounds to severe respiratory distress with diminished breath sounds bilaterally and ronchi in the mid-line of the chest. It can be asymptomatic and found incidentally during examinations for other conditions. The clinical manifestations of these patients are determined by the extent of lung collapse and underlying lung disease. Chest pain, dyspnea, tachycardia, tachypnea and general malaise are common. Hypoxia, respiratory distress, cyanosis and even respiratory failure may be seen in severe cases. On rare occasions, it has been described in pregnant women, during menstruation (catamenial pneumothorax), with Marfan syndrome, in sarcoidosis, and therapeutic irradiation.

Most cases of SBSP are symptomatic. Although unilateral spontaneous pneumothorax can occur without lung disease, SBSP is mainly seen in patients with chronic obstructive pulmonary disease, pneumonia, interstitial lung disease, tuberculosis, connective tissue disease and cancer or poisoning. Generally, if a spontaneous pneumothorax affects less than 20% of one lung, and there is no shortness of breath, active treatment is not necessary, and the patient may simply be kept under observation. The absorption rate of the air is about 1.25% (50-75ml)/day. However, if pneumothorax affects more than 20% of the lung, or if it increases during observation, chest tube drainage may be required. Simple aspiration can be used for spontaneous pneumothorax, but a tube thoracostomy is usually required for patients with SBSP because of the high likelihood of underlying lung disease. Open thoracotomy, or video-assisted thoracoscopic surgery is often necessary for persistent pneumothorax or suspected underlying disease. Prompt diagnosis and treatment are necessary because this condition can be life-threatening if there is respiratory compromise, or even fatal if it develops into tension pneumothorax. SBSP may present with various clinical symptoms and signs mimicking bronchial asthma or other lung diseases. In contrast to a large unilateral pneumothorax, SBSP presents difficulties in diagnosis from clinical signs alone and definitive diagnosis requires chest radiography. Young patients without underlying disease should have surgery following alleviation of symptoms by tube drainage. Older patients and patients with malignancy should be treated with great care and individually. SBSP is rare; however, it is usually symptomatic and can be fatal if accurate diagnosis and treatment are not provided in time. Urgent chest radiography is very important for all patients with respiratory distress in the emergency room. We suggest that emergency physicians be aware of this critical condition, since misdiagnosis will lead to unwarranted sequelae.

References

同時雙側自發性氣胸：病例報告

侯民波 1 蘇展平 1 劉昌明 1
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自發性氣胸是臨床上相當常見的疾病，好發於高瘦的年輕人，尤其是吸菸者。然而兩側同時發生自發性氣胸的機會就較為罕見，一旦發生常會以顯著的呼吸困難表現。我們報告一位四十一歲女性病患因胸痛、乾咳與輕度呼吸困難兩週而被送至急診就醫，胸部X光顯示雙側自發性氣胸。住院期間她接受治療包括同時雙側胸管置放和影像輔助式胸腔手術(Video-Assisted Thoracic Surgery簡稱VATS)。病患二十三天後平安出院。

關鍵詞：同時，雙側，自發性氣胸