

Case Report

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# Acupuncture-Induced Bilateral Tension Pneumothorax: A Case Report and Literature Review

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## Abstract

We now report a case of bilateral tension pneumothorax that occurred after acupuncture and cupping. A 56-year-old woman suddenly developed the symptoms of chest tightness, heart palpitations, shortness of breath and unconsciousness, the percutaneous oxygen saturation was 76%. Endotracheal intubation and chest Computed Tomography (CT) scan were administered in sequence. She was diagnosed with tension pneumothorax which was based on the symptoms and signs that appeared 7 h after the acupuncture and the CT scanning findings. We propose that patients receiving acupuncture around the chest wall must be adequately informed of the risk and related symptoms of pneumothorax.

**Keywords:** Acupuncture; Tension pneumothorax; Case report

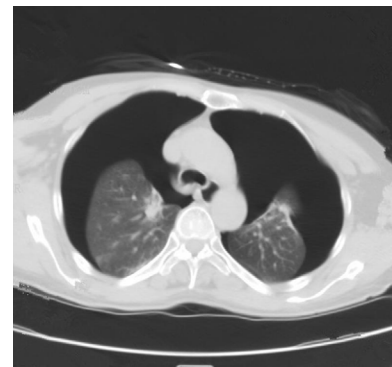
## Introduction

Acupuncture has become one of the most popular alternative treatments worldwide for a variety of illnesses [1]. A number of published reports have described some common adverse effects such as the occurrence of pain at the site of needling, tiredness and bleeding [2]. Fatal complications such as tension pneumothorax [3], haemothorax [4] and cardiac tamponade [5] can occur during acupuncture if the needle is pushed through the visceral pleura and pericardium. There have been still few reports of deaths during this procedure [6].

## Case Description

A 56-year-old woman visited a private acupuncture clinic because of the chronic pain on both sides of the shoulder especially on the right side as well as neck pain. She was healthy without any significant medical conditions in past history. Her weight, height and body mass index were 51 kg, 163 cm and 19.2 respectively. Before the incident, she already had received the successful acupuncture and cupping courses twice at the same private acupuncture clinic for shoulder pain and neck pain without complaining of any side effect.

One afternoon, she requested for another acupuncture and cupping treatment for easing her pain. The practitioner inserted approximate 18 needles into the relevant acupuncture points (GV14 Dazhui, GB21 Jianjing, SI14 Jianwaishu, LI 16 Jugu, TE14 Jianliao, SI10 Naoshu) then put the cupping treatment on them. She did not have any discomfort during the procedure and went home after the treatment. After half an hour, she was beginning to feel chest tightness, heart palpitations and chest pain especially in deep breath. Neither did she consult the acupuncture doctor nor did she go to hospital due to her ignorance of the symptoms. Along with the emergence of cold sweats, shortness of breath and even unconsciousness, her condition rapidly deteriorated. She was immediately sent to the emergency room of our hospital for treatment. Physical examination: T 36.2°C axillary temperature), Pulse rate 140 times per minute, respiratory rate 40 times per minute, blood pressure 85/40 mmHg, percutaneous oxygen saturation 76% (with oxygen inhalation at the flow rate of 6 L/min through a mask), moderate coma, cyanosis at skin and mucous membranes, distended jugular veins, trachea in the middle, reduced breathing exercises on both sides of thorax, drum sound in percussion, decreased breath sounds of both lungs in auscultation, dull heart sounds, round visible ecchymosis on the skin of neck and shoulder (Figure 1). In order to ensure the ventilation of the patient, endotracheal intubation and simple respirator assisted ventilation were performed immediately. According to the



**Figure 1:** Bilateral tension pneumothorax was confirmed immediately after the examination of chest computed tomography.

above-mentioned findings, we arranged a chest computed tomography and an arterial blood gas analysis for the patient. After the following chest computed tomography showing bilateral pneumothorax on both lungs which collapsed about 70% we immediately operated a closed thoracostomy with standard chest drainage in fifth intercostal space at midaxillary line to treat the pneumothorax with bilateral thoracoscopy. During the operation, we could hear the air whistling through the punctures. The patient's shortness of breath improved along with her percutaneous oxygen saturation returning to 96%. Laboratory test results: white blood cells:  $21.4 \times 10^9/L$ , hemoglobin: 129 g/L, neutrophils: 71.1%, platelet:  $255 \times 10^9/L$ , PH: 7.203,  $PCO_2$ : 79.6 mmHg,  $PO_2$ : 84.1 mmHg, lactic acid 4.0 mmol/L, standard bicarbonate 24.1 mmol/L, actual bicarbonate 30.1 mmol/L. She was then admitted to ICU (intensive care unit) and given the treatment of mechanical ventilation, analgesics, sedatives and so on. In the next morning after the cessation of sedatives, the patient recovered consciousness with the obvious enhancement of breath sounds in both lungs while the closed

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drainage was unobstructed along with water fluctuation. The second chest Computed Tomography (CT) showed that the compression of each lung was less than 5%. The endotracheal tube was extubated by the results of Spontaneous Breathing Trial (SBT) and bilateral chest drainage tubes were clamped. After 24 hours, the patient was transferred into a general ward after her bilateral chest drainage tube being pulled out. The patient had no any discomfort and discharged from hospital after three days.

## Discussion

Acupuncture is an ancient Asian holistic rehabilitation treatment. It is now one of the most popular complementary alternative therapies not only in Asia but also in a large part of the world [7]. However, a large number of reviews of acupuncture and case reports of adverse events have been published [2-6,8,9]. The prospective observational study conducted in Germany has shown that the rate of acupuncture leading to the incidence of adverse events was 8.6%, and the rate of serious adverse events (death, organ trauma, or hospital admission) was about 0.001% [10]; the two commonest adverse effects are bleeding and haematoma. Traumatic lesions can be divided into several categories according to the following topographical and structural characteristics: thoracic viscera; abdominal or retroperitoneal viscera; peripheral nerves; central nervous system; blood vessels [11]. In this case, we focused on analyzing serious thoracic viscera related adverse events. Several serious adverse events have been reported including pneumothorax [12,13] tension pneumothorax [3,14-16] haemothorax, cardiac tamponade [17,18] and so on. Bilateral tension pneumothorax is most often associated with spontaneous, subpleural bleb rupture, inheritable disorders including cystic fibrosis and Marfan syndrome, tumours, trauma and barotrauma [14]. Nevertheless, in this case, she was not exposed to any of the above-mentioned risk factors. Needles being inserted too deeply or from a wrong angle because of lack of anatomic knowledge or carelessness of individual medical practitioners may cause serious complications. Due to the tension pneumothorax, the patient was admitted into emergency room with fallen blood pressure, unconsciousness, impaired venous return, reduced cardiac output and hypoxaemia. About the treatment of pneumothorax, Eung-Soo Kim et al., [7] think that treating the acupuncture pneumothorax by making a choice between closed thoracostomy and percutaneous chest drainage should be based on a smoking history and chest radiographic findings, however we think that the selection of therapeutic methods should be based on clinical symptoms and signs as well as severity and types of pneumothorax.

## Conclusion

Along with acupuncture being more and more popular, adverse events are also accordingly increasing. But some of these adverse events can be prevented by the knowledge of internal anatomy, and the informed consent which should include details of the interval from treatment to the appearance of symptoms and the nature of

possible symptoms. It is necessary to adequately inform patients of the possibility of complications and possible symptoms in order to avoid serious adverse events from its occurrence by offering timely treatment.

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