

# Iatrogenic Tension Pneumothorax Following Acupuncture Therapy – A Case Report

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## **Abstract :**

Presence of air within the pleural cavity is defined as pneumothorax which implies that either visceral or parietal pleura have been disrupted. It has been found that the incidence of primary spontaneous pneumothorax is estimated between 2-18 cases per 100,000 population/year. The peak incidence is between the 2<sup>nd</sup> and 3<sup>rd</sup> decade of life. The incidence of primary spontaneous pneumothorax is high among smokers<sup>1</sup>. The occurrence of pneumothorax where, intrapleural pressure exceeds atmospheric pressure throughout all or most of the respiratory cycle is known as tension pneumothorax. This condition is considered as medical emergency because there is an acute deterioration in cardio-pulmonary functions. Since ancient period for almost over 3000 years acupuncture has been used to treat health conditions including pain, yet it has only been in the last half a century that biochemistry and neurological imaging advances have allowed scientific understanding of its physiological mechanisms. The multiple lines of evidence is that endogenous opioid system is involved in acupuncture's pain-relieving mechanisms. The large clinical trials of acupuncture for treating neck and lumbar pain, knee osteoarthritis, migraine and other pain conditions have been performed in the last two decades. The results of these trials confirm the acupuncture's clinical efficacy in treating chronic pain. At the other end, lot of adverse effects due to the procedure have been encountered but rarely reported. Common among them is improper needle hygiene, which can be a potential source of communicable diseases.

**Key words :** Acupuncture, Tension pneumothorax, Migraine

## **Introduction :**

Presence of air between visceral and parietal pleura that leads to lung collapse is known as pneumothorax. In the ancient period, this was used in the doctoral thesis of the French physician Itard in 1803. Although the presence of an abnormal collection of fluid and air within the

chest might have been inferred as early as the 5<sup>th</sup> century BC by doctors in ancient Greece who practiced Hippocratic succussion of the chest. It is because of the inherent tendencies of the chest wall to expand and the lungs to collapse, the pleural space has a negative pressure compared with atmospheric pressure. The alveolar pressure is always greater than the pleural pressure, so

when a communication develops between an alveolus and the pleural space it results in airflow down the pressure gradient until equilibrium occurs or until the communication is sealed<sup>2</sup>. As the pneumothorax enlarges, lung becomes smaller. The main physiologic consequence of this process is a decrease in the vital capacity and the partial pressure of oxygen. It is classified on the basis of its cause. Trauma (iatrogenic or accidental) is a common cause of pneumothorax. When pneumothorax occurs without preceding trauma, it is called as spontaneous pneumothorax, either primary (without clinically or radiographically apparent lung or chest wall disease), or secondary (when such disease is present)<sup>3</sup>.

Acupuncture, an alternative medical therapy that has gained popularity in treatment of various conditions in the Western World and in India. Although acupuncture is used for a variety of conditions, evidence base of clinical efficacy is limited to backache, neck pain, and idiopathic headache. The widespread use of acupuncture has increased the need for valid information on safety issues. Potential life-threatening acupuncture-related complications are very rarely reported but include transmission of infections, pneumothorax, haemorrhage or haematomas<sup>4</sup>. This case is opted for reporting because, pneumothorax is a rare reported complication of acupuncture therapy. Though this procedure is widely practiced in India, there is no any cases of this kind being reported

### **Case report :**

70 year old male who is a known case of bronchial asthma well controlled with minimal medications had upper and lower backache of long duration. Had consented for acupuncture therapy and following the first session he started developing left chest pain with dyspnea. The symptoms progressed with worsening

breathlessness and came to the hospital with clenched fist over his left chest (Levine's sign) and had hypotension. A 12 lead ECG was done in the emergency room which showed non-specific ST-T changes. So thought of myocardial ischaemia and planned for loading dose of antilipids. But since the patient developed all these symptoms following a session of acupuncture to his left paraspinal region, patient was examined in detail in the emergency room which revealed hyper-resonance note with absent breath sounds over the left lung fields. Chest radiograph showed a massive left sided tension pneumothorax. Since the patient was an asthmatic, CT chest was done to see for the presence of any bulla that would have ruptured. But it was normal. Also from CT it is evident that pleura is only 2.6 cm from the surface at the left paraspinal region. Hence it got easily damaged by the needle during the therapy.

### **Discussion :**

Almost 3000 years ago, acupuncture first originated in China, and today it is practised worldwide including India. Fine needles comprising of 32–36 gauge are inserted into certain body locations called as acupoints. There are 356 mapped points located on meridians or channels of energy flow on the surface of the body. In the traditional Chinese medicine system, body is seen as a delicate balance of two opposing and inseparable forces: yin and yang. Yin represents the slow, cold or passive principle, while yang represents the excited, hot, or active principle. Needles are inserted to a depth of 4–25 mm and left in place for a period of time usually few seconds to many minutes. There are 6–12 needles inserted at different acupoints at the same time. The sensation is often described as dull aching or tingling at the entry point. A tiny focused electric current is applied to the skin at the acupoints or it can be applied to the needle. Certain endogenous opiate responses have been reported.

Conditions that may be amenable to acupuncture identified by the WHO<sup>5</sup>Upper respiratory tract disorders:

Acute sinusitis, rhinitis, tonsillitis

G I disorders: Acute/chronic gastritis

Chronic duodenal ulcer

Chronic colitis

Pelvic pain

CNS disorders Headache

Migraine

Trigeminal neuralgia &amp; post-herpetic neuralgia

Peripheral neuropathy

Musculo-skeletal disorders:

Tennis elbow &amp; frozen shoulder

Cervico-brachial syndrome

Sciatica

Low back pain

Osteoarthritis

Phantom limb pain

Fibromyalgia

Others:

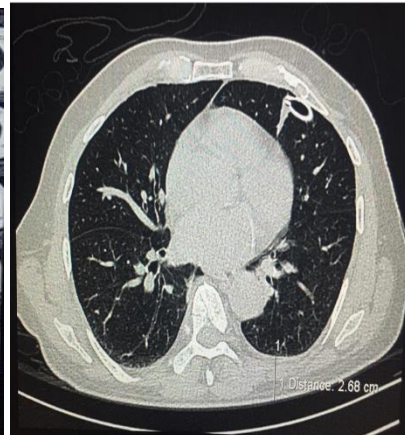
Dysmenorrhoea

Atypical chest pain, labour pain , dental pain

Pneumothorax is a common and very rarely reported complication of acupuncture therapy. It can cause severe haemodynamic instability. When the intrapleural pressure exceeds the atmospheric pressure throughout expiration and often during inspiration, a tension pneumothorax develops. Most patients who develop a tension pneumothorax are receiving positive pressure during mechanical ventilation. The collapsed lung on the affected side and the compressed lung on the contralateral side compromise effective gas exchange causing hypoxia. This hypoxia and decreased venous return caused by compression

of the relatively thin walls of the atria impair cardiac function. The decrease in cardiac output results in hypotension and, finally hemodynamic collapse causing death , if untreated.

Here , our patient who is an asthmatic , well controlled with medications with no underlying bullae came with complaints of progressive chest pain and dyspnea. Examination revealed left sided pneumothorax secondary to insertion of acupuncture needle. Patient has successful re-expansion of the collapsed lung following placement of intercostal tube.



LEFT SIDED PNEUMOTHORAX CT  
CHEST - NO BULLAE TRACK  
TAKEN BY NEEDLE (2.6 CM FROM  
SURFACE)

Finally , though in this patient at his initially assessment in the emergency room with an 12 lead ECG with age being a risk factor , thought of acute myocardial ischemia, but detailed systemic examination proved the diagnosis, which once again stresses the fact that there is no alternative for detailed history and clinical examination in the diagnosis of a disease. Therefore , we insist that any patient who develops dyspnea after acupuncture to the chest should always be suspected of pneumothorax, which is a serious and potentially life threatening complication, and considered to be closely related to poor technique or inadequately trained acupuncturists<sup>6</sup>.

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