

## Acupuncture-Induced Pneumothorax

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### Abstract

Acupuncture is a very popular form of eastern medicine therapy. It represents a traditional Chinese Medicine practice which originated in China some 4000 years ago. Today, it is available and practised in many countries, including in the western world. Acupuncture is very frequently used for various types of pain relief, especially chronic pain.

A series of unilateral or bilateral acupuncture-induced pneumothoraxes, all presenting within 4 hours of the procedure, is shared here. Acupuncture-induced pneumothorax is not as uncommon as it is perceived. It is likely to be linked to how popular and how frequently acupuncture is used in the community or society. Inclusion and understanding of anatomical knowledge/ structures in those performing acupuncture is important. Informed consent, with risks of potential complications should be obtained from patients undergoing acupuncture.

**Keywords:** Acupuncture, Pneumothorax, Meridians, Eastern medicine

### Introduction

The practice of Medicine encompasses the spectrum of western medicine, eastern medicine, alternative medicine and others. There may be some degree of overlap between these domains, but each does have its unique principles and practices. For patients seeking treatment or relief from their symptoms, they may do so from one source first and if they do not get the expected results or outcomes, it is not uncommon for them to move on to another alternative form. Some patients also receive treatment from more than one source simultaneously. In many Asian and eastern countries, this practice of getting treatment from a combination of western, eastern (also

called oriental medicine, using natural forms of treatment such as herbs, mind-body exercise, massage etc) and alternative medicine (outside mainstream therapies, also known as complementary medicine) is common [1].

Acupuncture is a very popular form of eastern medicine therapy. It represents a traditional Chinese Medicine practice which originated in China some 4000 years ago. Today, it is available and practised in many countries, including in the western world. Acupuncture is very frequently used for various types of pain relief. The basis of acupuncture is the relief of 'blocked energy', or "qi" along the meridians by needling or stimulation at specific acu-points. This unblocking of the "qi" flow along the

meridians is thought to be important for normal bodily functions. This free flow of “qi” contributes to the proper balance of ‘yin’ and ‘yang’ to maintain good health. The forms of stimulation to get the energy going at the acupoints can be from dry needling, moxibustion and even laser application. These are recognized practices in acupuncture [2-4].

In general, acupuncture is a relatively safe procedure, but there are some complications that have been reported. These include infection, formation of pustules and granuloma at the site of application. Rarer would-be injury to internal organs and pneumothorax. Acupuncture is frequently sought for muscular-skeletal type pain, back ache, headache and migraine or general ill health. It is also often used for chronic pain management [4-6].

## Acupuncture-induced Pneumothorax

Acupuncture involves insertion of a needle through a small puncture. As with any sharp objects, the risk of injuries or perforation to internal organs is potentially present. This is even if the needles used are very fine, i.e., about 0.25mm in diameter. The length of the needles may range from 30 mm to 45 mm. In general, there are 12 designated body meridians for energy flow in each person. This energy flow is complementary for ‘yin’ and ‘yang’. Acu-points along these meridians are specific for symptoms. These meridians pass through the human body anteriorly and posteriorly, spanning all the body surface. Thus, acupuncture can be performed in both the supine as well as prone posture [4-7].

Upon insertion, the angle and depth may have inter-individual variations. This is dependent both on the acupuncture practitioner as well as patient factors. Post insertion rotation is also practised; which can be clockwise or anti-clockwise in direction. All these factors can increase the injury potential [8, 9]. The actual incidence of acupuncture-related pneumothorax is not clear [4, 8]. In the Chinese literature, there are two papers that have shared the incidence of adverse events related to acupuncture:

Zhang J et al reviewed adverse events related to acupuncture over a period of 30 years (1980 to 2009)

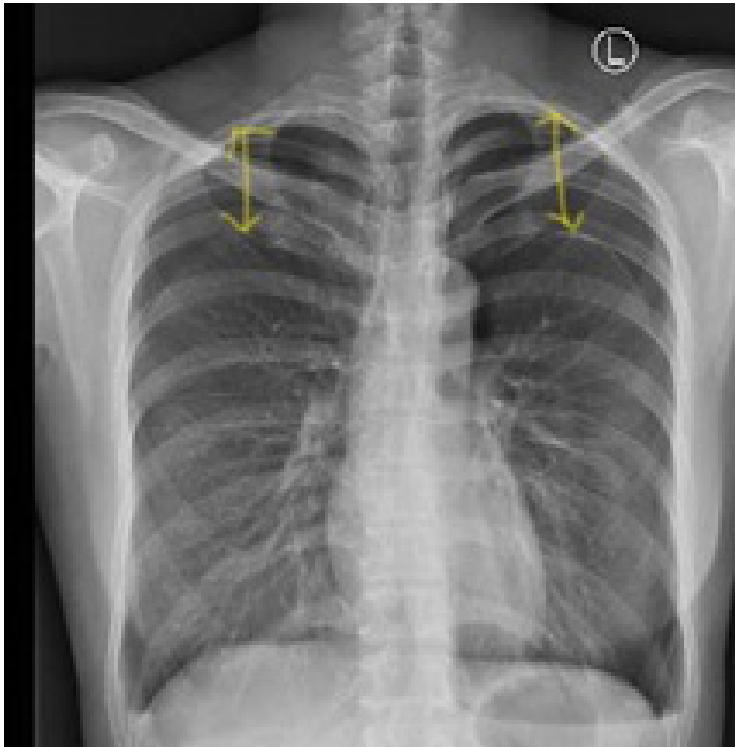
and pneumothorax was noted to be the most frequent injury. There were 201 cases during that period of review. At the same time the other traumatic adverse events included subarachnoid haemorrhage, spinal epidural hematoma and abdominal organ injuries [5].

He W et al did a 54-year review and found that pneumothorax accounted for about 30% of the total adverse events [6].

In the western literature, there have mostly been case reports published [8-17]. The common acu-points utilised in some of these injuries include areas around the neck, borders of the scapular (including the inferior angle of the scapular as well as its medial border) and areas of the back around the spine. There have also been some comments, though not strongly evidence-based, that acupuncture related pneumothorax appears to be more often associated with patients who are smokers, with tall body habitus or have underlying medical conditions such as cancer or taking long term steroids [8, 10, 14]. Now in acupuncture-induced pneumothorax, there have been cases of tension pneumothoraxes reported as well [18-20].

Figures 1 to 4 below share some radiographs of acupuncture induced pneumothoraxes. All had small bore chest tube (Wayne’s catheter) inserted and were admitted for management. All were subsequently discharged well with full expansion of the lungs achieved. In Figure 1a, there is bilateral pneumothoraxes. The insertion of the acupuncture needles was in the area of the rhomboids, just medial to the scapular. Wayne’s catheter inserted on one side only. For the complete pneumothorax in Figure 3a, the insertion was along the medial border of the scapular. For the pneumothoraxes in Figure 2a and 4a, the needling was done at the base of the neck. These sites (acu-points) fall along the known energy meridians.

Figures 1b, 2b, 3b and 4b show the chest radiographs after the insertion of the chest tube (Wayne’s catheter), with improvement noted. Figures 1c, 2c, 3c and 4c show the chest radiographs at discharge, with resolution of their pneumothoraxes. For the bilateral pneumothoraxes (Figure 1a), both the right and left sided pneumothoraxes resolved despite having the Wayne’s catheter inserted only on one side.



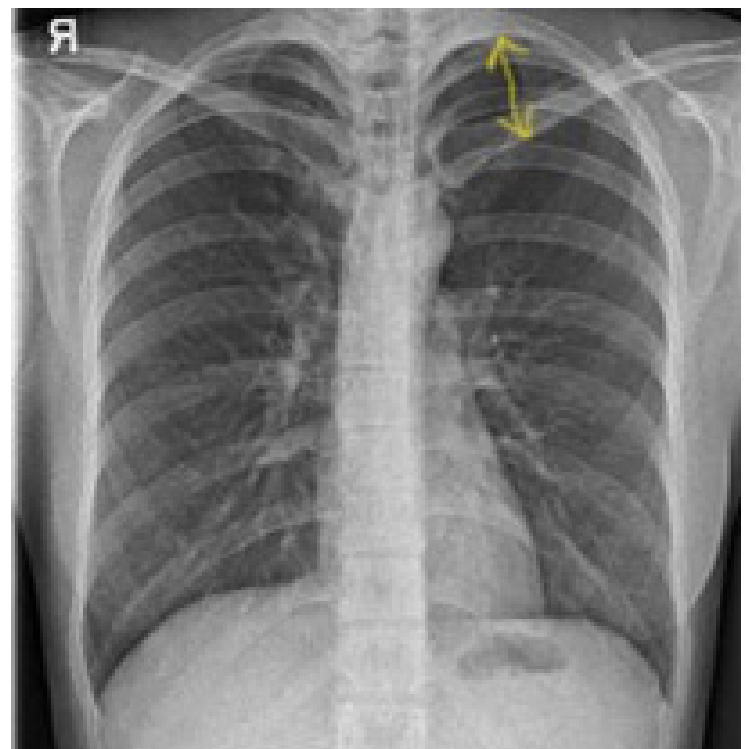
1(A)



1(C)



1(B)



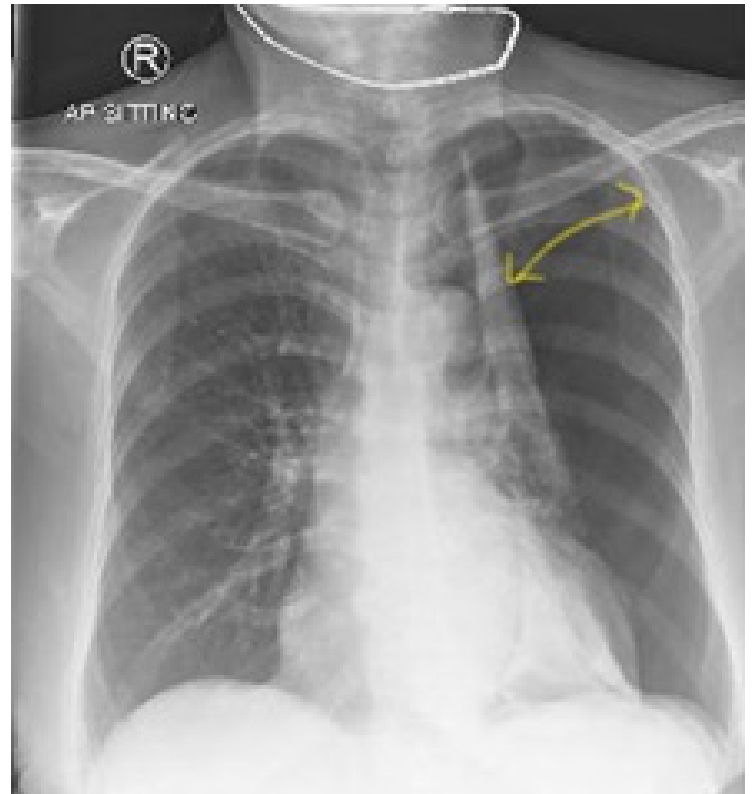
2(A)

Figure 1a: Bilateral Pneumothorax (marked by yellow arrows).  
Figure 1b: Post Wayne's Catheter insertion on the left with small pneumothorax on the right. Figure 1c: Full expansion of both lungs at discharge.



2(B)

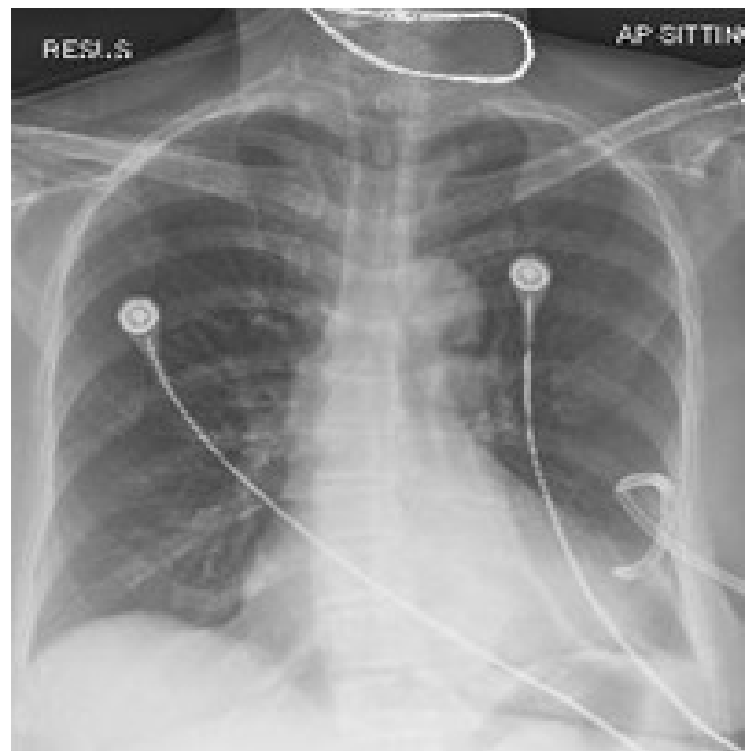
Figure 2 a: Left Pneumothorax (marked by yellow arrow). Figure 2 b: Post Wayne's catheter insertion on the left with re-expansion of the left lung. Figure 2c: Full expansion of the left lung at discharge.



3(A)



2(C)



3(B)



3(C)



4(B)

Figure 3a: Complete left Pneumothorax (marked by yellow arrow). Figure 3b: Post Wayne's catheter insertion on the left, with re-expansion of the lung. Figure 3c: Full expansion for the left lung at discharge.



4(A)



4(C)

Figure 4a: Right Pneumothorax (marked by yellow line). Figure 4b: Post Wayne's catheter insertion on the right, with re-expansion. Figure 4c: Full expansion at discharge.

## Conclusion

Acupuncture-induced pneumothorax is not uncommon as is perceived. It is also likely linked to how frequently acupuncture is used in the community or society. Inclusion and understanding of anatomical knowledge/structures in those performing acupuncture is important. Informed consent, with risks of potential complications should be obtained from patients undergoing acupuncture. This can be customised accordingly and worded appropriately based on which anatomical sites will be involved in the needling procedure. It will also be useful to have a discharge advisory checklist with specific instructions, which may include looking out for respiratory related symptoms or others, relevant to the site of acupuncture. Finally, it will also be good to have the practitioners performing the procedure be trained in lung/pulmonary auscultation as this can be performed before the needling process to have the baseline air entry documented [21, 22].

The principle is to have the practitioners understand why certain acu-points can be potentially dangerous and risks can be avoided with due care during the procedure.

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