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Jacobs Journal of Clinical Case Reports

Case Report

# Acupuncture As a Cause of Pneumothorax: A Case Report

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Received: 07-08-2015

Accepted: 08-04-2015

Published: 08-20-2015



## Abstract

The potential for pneumothorax as a result of acupuncture is minimal. Nevertheless, clinicians need to be aware of the risk. This case report presents an incident that involved a sixty three year old male who developed a pneumothorax several hours after having acupuncture for back pain. This patient required a chest drain when his pneumothorax failed to resolve with high flow oxygen and thoracocentesis. Management of acupuncture pneumothorax remains debated and may differ between clinicians. This case presents acupuncture as a cause of pneumothorax and highlights the importance of history taking especially to include the use of alternative or complementary therapies.

**Keywords:** Acupuncture; Pneumothorax; Thoracocentesis; Chest drain

## Introduction

Acupuncture is an alternative therapy involving the use of needles either non-penetrating or penetrating to the body at different depths [1]. It normally involves fine needle insertion at over three hundred and sixty five recognised points of the body however needling technique can vary amongst acupuncturists. There are side effects that would be expected with needle use in any procedure such as local complications and infection risk. Tension pneumothorax as well as cardiac tamponade are known serious complications of acupuncture however their incidence is rare.

Pneumothorax is often primary and spontaneous. Underlying respiratory disease such as asthma, COPD (chronic obstructive pulmonary disease) or lung carcinoma can contribute to a secondary pneumothorax. Physicians are aware that there are many iatrogenic causes of pneumothorax. For example, the insertion of a subclavian central venous catheter, percutaneous liver biopsy or trans-bronchial biopsy. The objective of this case is to present acupuncture as a potential cause for pneumothorax and to emphasise the importance in asking about precipitating factors towards a diagnosis.

## Case Presentation

A sixty three year old retired male professor presented to the emergency department with gradual onset of pleuritic chest pain and shortness of breath. He had received acupuncture two days beforehand for thoracic back pain. He had no other associated symptoms. He had a past medical history of asthma and used salbutamol inhaler therapy one hundred micrograms on an 'as required' basis.

A recent exacerbation of his asthma secondary to a lower respiratory tract infection was treated in the community with oral amoxicillin, one gram four times a day for seven days and a seven day course of oral prednisolone, forty milligrams once daily. He was not taking any other medications at this time. There was no family history of respiratory or cardiac disease. The patient had a good exercise tolerance and was a non-smoker.

On physical examination in the emergency department the patient was alert and orientated. His respiratory rate was 22 breaths per minute, oxygen saturation levels on room air were 96%, heart rate was 82 beats per minute and his blood pressure was 110/75 mmHg. His chest appeared to have equal chest expansion bilaterally. On percussion of the chest, there was increased resonance at the right apex. On auscultation, breath sounds were quiet in the right apex region. Initial investigations were carried out including an arterial blood gas. This was obtained whilst the patient was on high flow oxygen at 10 L/min( litres per minute). It showed; pH 7.45, $PaO_2$ 165 mmHg (millimetres of mercury), $PaCO_2$ 40 mmHg, $HCO_3$ 22.5 mmol/L(millimoles per litre) and a base excess of -1.0 mmol/L. Chest radiograph revealed an apical right sided pneumothorax measuring five point seven centimetres (Figure 1).

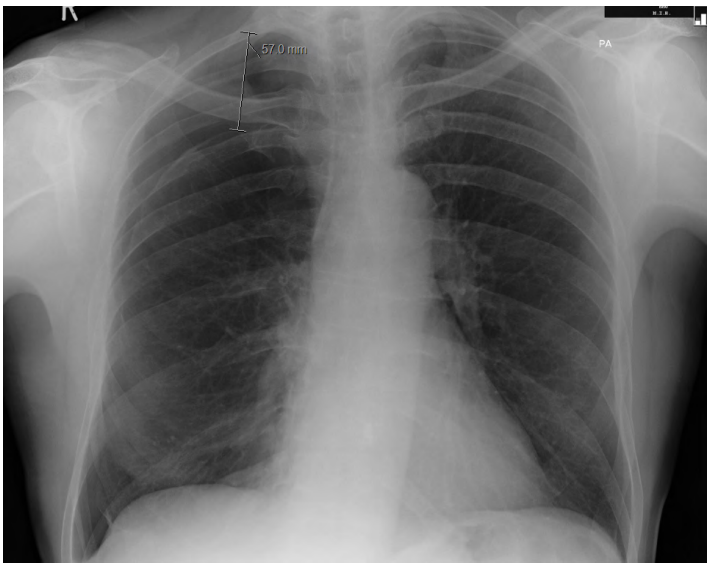


**Figure 1.** Initial chest radiograph taken in the emergency department shows a right sided apical pneumothorax measuring 57mm.

Initially the patient was treated with high flow oxygen at 15 L/min for 24 hours. Repeat chest radiograph following this showed little resolution of the pneumothorax. Therefore the decision was made to perform thoracocentesis using an eighteen gauge cannula and syringe. A small amount of air was aspirated using this technique however repeat chest radiograph again showed that this had little success. Therefore a 12 French gauge chest tube was inserted in the right thoracic cavity. It was removed 48 hours later when resolution of the pnuemothorax was confirmed on chest radiograph.

## Discussion

Two surveys carried out in the UK found that in over sixty thousand acupuncture treatments no adverse effects were found [2]. A prospective study carried out in Germany with over ninety thousand cases reported two adverse outcomes of pneumothorax. It also reported that the most common side effects were pain on needle insertion and haematoma at the needling sites [3]. Risk factors for complications include inadequate knowledge of basic human anatomy and an untrained individual carrying out the procedure [4]. Treatment of an acupuncture induced pneumothorax is controversial regarding whether or not a chest drain is required. Traditionally it is said that if the pneumothorax measures over two centimetres, intervention in the form of thoracocentesis or chest drain insertion is indicated. If the lung does not re-inflate within forty eight hours, specialist opinion is advised and surgical intervention may be required [5].

Over the years, clinicians have developed their own strategy into managing pneumothorax most likely involving risk stratification. A retrospective study carried out in the USA (United States of America) in 2009 showed that factors such as smoking history and chest radiograph findings must be considered before deciding on treatment. In non-smokers with the absence of underlying respiratory disease no beneficial result was seen with percutaneous chest drain [6]. Underlying asthma may well have predisposed this patient to a pneumothorax and may also have delayed its resolution.

## Conclusion

In this patient's case he did not have a tension pneumothorax, chest radiograph did not show evidence of bullae or emphysema and therefore he was initially treated with high flow oxygen. As the pneumothorax did not resolve after thoracocentesis, the decision was made to insert a chest drain which successfully treated his pneumothorax. The case highlights the importance of history taking and the consideration of iatrogenic causes of respiratory pathology. Whether or not the patient uses alternative therapies or not can help towards possible diagnosis. In this case it is important to note that despite relatively normal vital signs of observation and arterial blood gas values on initial investigation; there

was a substantial pneumothorax on chest x-ray which did not respond to conservative management. Equally in this regard, chest radiograph can miss up to seventeen percent of pneumothoraxes [7].

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

## Competing interests

The authors declare that they have no competing interests.

## Authors' contributions

Dr Kidney treated this patient during admission and suggested writing up a case report on the interesting aetiology of his pneumothorax. Dr Deeny seeked consent from the patient, analysed the patient's data and researched the topic.

## Acknowledgement

I would like to thank Dr. Kidney, supervising consultant physician who encouraged me to write the case on his patient.

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