Is pneumothorax after acupuncture so uncommon?

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ABSTRACT Acupuncture is one of the most widely used forms of traditional Chinese medicine often referred to as alternative therapy in the Western World and over the past decades it has become increasingly popular in Denmark. Pneumothorax is known as the most common serious complication following acupuncture, but it is quite rarely reported. During a three-month period two patients with pneumothorax caused by acupuncture were admitted to our department. The purpose of this case report is to increase awareness of this complication, which may not be so uncommon.

KEY WORDS Pneumothorax; acupuncture; acupuncture complications; adverse events

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Introduction

Acupuncture is considered an alternative medical therapy which has gained increasing popularity in treatment of various conditions in the Western World including Denmark over the past two decades (1). Although acupuncture is used for a large variety of disorders, the evidence base of clinical efficacy is essentially limited to back and neck pain, assisted conception, idiopathic headache, and nausea/vomiting whether induced by chemotherapy or in a postoperative setting (2). The widespread use of acupuncture has increased the need for valid information on safety issues. Serious and potentially life-threatening acupuncture-related complications are very rarely reported but include transmission of infections, pneumothorax, cardiovascular lesions, and haemorrhage or haematomas including the central nervous system (3).

Within a few months two patients were admitted to our department with pneumothorax following acupuncture, which prompted us to prepare a case report speculating that this serious complication may be under-reported.

Case 1

A 64-year-old previously healthy male was admitted to the Emergency Department with shortness of breath. The day before he had received acupuncture at a local health clinic for lower back and sciatic nerve pain. According to the patient one of the needles had been placed on the left posterior part of the chest—just medial to inferior scapular angle. He immediately experienced pain and shortness of breathing only minutes after a needle was inserted in the location described above. Initially, his complaints were ignored but the patient finally decided to seek medical attention because his symptoms persisted.

Upon admission the patient complained of mild to moderate dyspnoea. Vital signs were: pulse (P) 83 beats per minute, blood pressure (BP) 129/86 mmHg, peripheral saturation (SAT) 88-94% without oxygen, respiratory frequency (RF) 12 per minute, and temperature (Tp) 37.3 ℃. Blood gas analysis was not obtained. An acute chest X-ray revealed a complete pneumothorax on the left side (Figure 1A). The patient was immediately treated by chest tube insertion with instant respiratory relief (Figure 1B). The chest tube was removed the following day and the patient was discharged without any permanent injury.

Case 2

An 82-year-old female with chronic obstructive pulmonary disease was admitted to the Emergency Department with severe shortness of breath. Earlier the same day she had received acupuncture at a chiropractic clinic for chronic nerve pain on the right side of her chest originating from a herpes zoster infection. According to the patient acupuncture needles were placed on several areas on the front and the back of the right side of the chest. She had previously received the same acupuncture treatment without any side effects. There was no immediate

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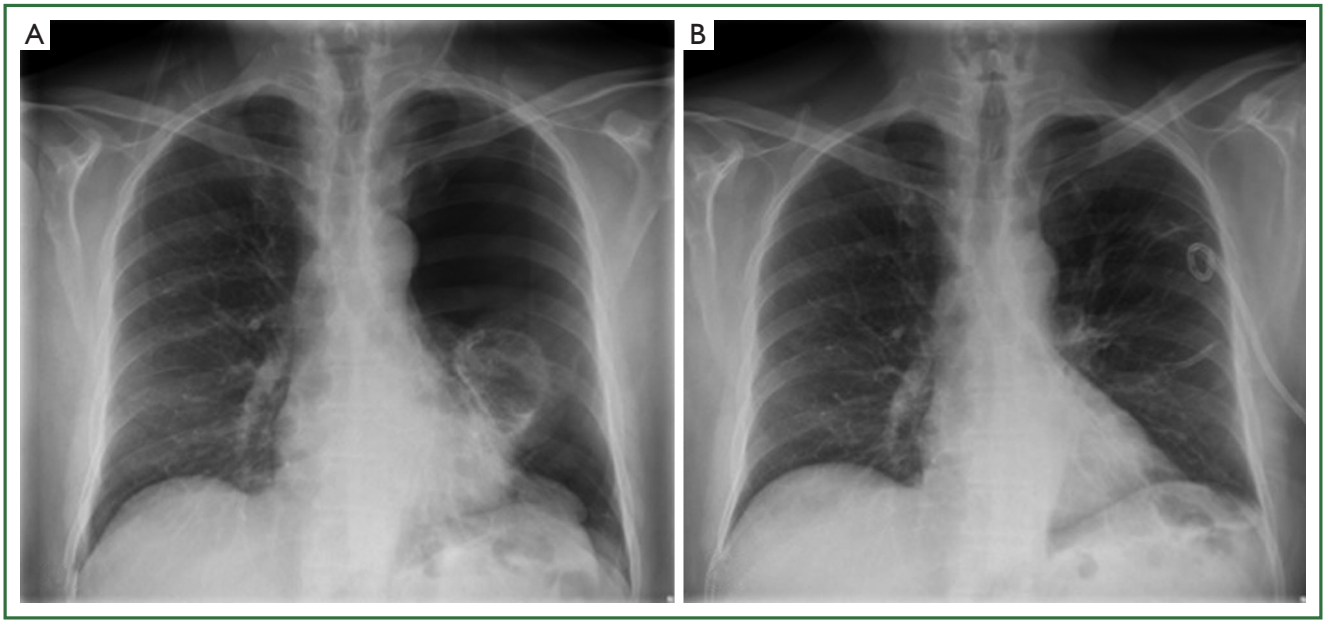

Figure 1. Two chest X-rays of a 64-year-old male with a complete pneumothorax on the left side caused by acupuncture (A) and immediately after insertion of a chest tube with re-expansion of the left lung (B).

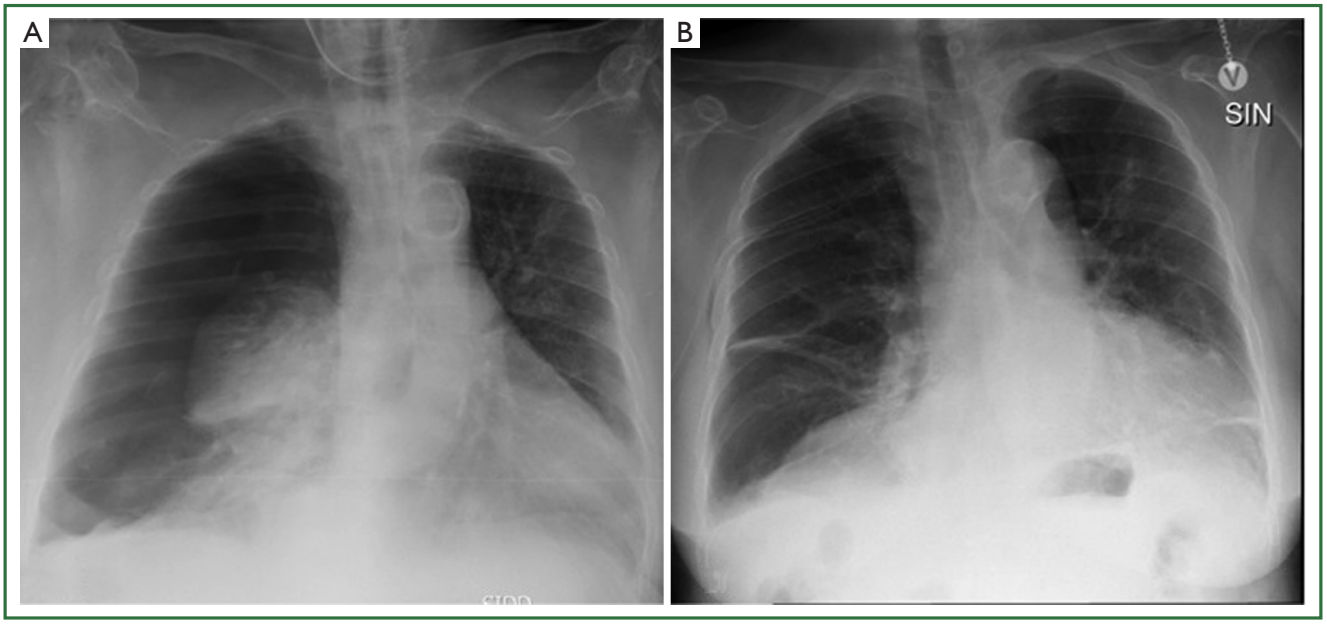

Figure 2. Two chest X-rays of an 82-year-old woman with a complete pneumothorax on the right side caused by acupuncture (A) and immediately after insertion of a chest tube with re-expansion of the right lung (B).

discomfort, but approximately 90 minutes after acupuncture treatment she developed shortness of breath.

Upon admission the patient suffered from severe shortness of breathe at rest. Vital signs were: P 126 bpm, BP*, SAT 83%, RF 24, Tp 37.7 ℃. Blood gas analysis: pH 7.269, oxygen partial pressure (pO_2) 7.37 kilo Pascal (kPa), carbon dioxide partial pressure (pCO_2) 7.68 kPa, Base excess (BE) –2.2 mEq/L, oxygen saturation (SO_2) 0.83, hydrogen carbonate 25.5 mmol/L, lactic acid 2.0 mmol/L, glucose 9.5 mmol/L. An acute chest X-ray revealed a complete pneumothorax on the right side (Figure 2A).

The patient was treated with a chest tube with good clinical and radiological effect (Figure 2B). The following day the air leak had stopped and the chest tube was removed. The patient was discharged without any permanent injury.

*Not measured because the patient was uneasy and could not cooperate.

Discussion

Cochrane reviews cautiously indicate that acupuncture has its place within specific disorders or conditions such as back and neck pain, assisted conception, idiopathic headache, and nausea/vomiting (2). Provided there is an evidence based indication for acupuncture one must also accept a certain risk of complications. However, one of our patients (case 2) was in serious respiratory distress upon admission and her condition had most likely worsened within a short period of time due to low oxygen saturation and carbon dioxide retention or development of a tension pneumothorax as revealed by blood gas analysis and the chest X-ray showing moderate displacement of the mediastinum towards the left side (Figure 2A).

Serious adverse events related to acupuncture are rarely reported. A recent systematic review by Ernst *et al*. reported 95 patients including 42 with visceral trauma of which pneumothorax was the most frequent serious adverse event accounting for 4 deaths (3). But as commented by MacPherson *et al*., case reports are low grade evidence which pay no attention to frequency of occurrence, and it is not a representative source on which to base generalizations on clinical safety (4). Currently, best available data are from prospective observational studies, e.g., a large study from Germany published by Witt and colleagues that included 2.2 million acupuncture sessions in 229,230 patients (5). The overall incidence of acupuncture-related adverse events was 8.6% among which 2.2% of the patients required medical treatment. The vast majority of adverse events were due to minor bleeding/haematomas (6.1%), pain (1.7%) or vegetative symptoms such as vertigo, nausea etc. (0.7%). Thirty-five patients suffered from breathing difficulties after acupuncture treatment but only two cases of pneumothorax were reported. Furthermore, 31 patients suffered a nerve injury, which in one case lasted 180 days but overall no permanent injuries or deaths occurred. Given the lack of information about how many patients were treated with acupuncture to the chest, we still cannot comment on the incidence with respect to pneumothorax. However, with two episodes in a relatively short period it may be that pneumothorax after acupuncture to the chest is more common than previously expected and one may even speculate if there are undiagnosed subclinical cases that resolve spontaneously.

We recommend that any patient who develops shortness of breath following acupuncture to the chest should always be suspected of pneumothorax, which is a serious and potentially life threating complication, and considered to be closely related to poor technique or inadequately trained acupuncturists (2-5).

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