

Pneumothorax after acupuncture

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Acupuncture is a well-known form of complementary and alternative medicine (CAM). There is mounting evidence for its efficacy in treatment of chronic pain conditions, such as neck and back pain, osteoarthritis, and chronic headache and shoulder pain, and it has a good safety profile.¹⁻⁵ However, rare cases of serious adverse events (AEs) such as pneumothorax are described in the literature.⁶⁻¹⁴ Complementary and alternative medicine is becoming increasingly popular among patients.^{15,16} Therefore, it is important we acquaint ourselves with the available evidence so we can safely counsel our patients on the risks and benefits.

EDITOR'S KEY POINTS

- Acupuncture is a relatively safe and effective form of complementary and alternative medicine. While pneumothorax is the most common serious adverse event with acupuncture, it is still rare. However, clinicians should have a high index of suspicion if a patient presents with chest pain and dyspnea after acupuncture.
- There is a range of training for acupuncturists across Canada. Therefore, it would be prudent for family physicians to familiarize themselves with the standards in their respective provinces.
- Complementary and alternative medicine is becoming increasingly popular among patients and evidence is mounting in favour of some such treatments. Therefore, family physicians should be familiar with the available research so they can safely counsel their patients on the risks and benefits.

POINTS DE REPÈRE DU RÉDACTEUR

- L'acupuncture est une forme de médecine complémentaire et alternative relativement sécuritaire et efficace. Bien que le pneumothorax soit l'effet secondaire sérieux le plus commun de l'acupuncture, il demeure très rare. Par ailleurs, les cliniciens devraient soupçonner fortement cette cause lorsqu'un patient se présente avec des douleurs à la poitrine et de la dyspnée après l'acupuncture.
- Il existe divers degrés de formation pour les acupuncteurs au Canada. Il serait donc prudent que les médecins de famille se familiarisent avec les normes à cet égard dans leur province.
- La médecine complémentaire et alternative gagne en popularité auprès des patients et les données probantes favorables à de tels traitements se font de plus en plus nombreuses. Par conséquent, les médecins de famille devraient se familiariser avec la recherche disponible afin de conseiller leurs patients de façon sécuritaire au sujet des risques et des avantages de ces types de traitement.

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Case

A 53-year-old woman presented with a 4-hour history of left upper back pain after undergoing acupuncture. As the needle was inserted into her posterior left hemithorax just medial to the scapula, she described a sudden shooting pain radiating to her left shoulder. Since then, her pain progressively worsened and she presented to the clinic.

On examination, she was moderately distressed and had a blood pressure of 135/82 mm Hg, a heart rate of 89 beats/min, a respiratory rate of 22 breaths/min, and an oxygen saturation of 98%. There was no evidence of ecchymosis or needle marks on her back. There were markedly reduced breath sounds in her left hemithorax and increased resonance to percussion on her left side. A chest x-ray scan was immediately sought (**Figure 1**), which confirmed the diagnosis of pneumothorax. The patient was sent to the emergency department, where a chest tube was inserted in an attempt to re-expand her lung. Unfortunately, she required a prolonged hospital stay owing to incomplete re-expansion of her lung despite multiple chest tube insertions. She was eventually referred to a cardiothoracic surgeon, but luckily did not require surgery, and she was discharged 1 week after admission. She still experiences intermittent left upper back pain.

Diagnosis and treatment

Other signs of pneumothorax include decreased tactile fremitus and decreased vocal resonance on the side of the pneumothorax. Signs of tension pneumothorax include paradoxical pulse, tracheal deviation, and displacement of the apex beat.¹⁷ The coin test for pneumothorax involves holding a coin on the anterior hemithorax of the suspected lung collapse and tapping another coin against it, resulting in a bell or metallic sound on auscultation of the posterior hemithorax.¹⁸

Figure 1. Chest x-ray scan showing pneumothorax in the left hemithorax (arrows)



Treatment of a pneumothorax depends on its size—if it is small (defined as <50% of the volume of the hemithorax or a visible rim of >2 cm between the lung margin and the chest wall), one can use conservative treatment and allow it to resolve spontaneously.¹⁹ In this case it was larger, so the patient was immediately referred to the emergency department. To re-expand the lung, a chest tube is inserted in the safe triangle of the axilla, and connected to a tube with either a water seal or a 1-way (Heimlich) valve, allowing air to escape but not enter.¹⁹ Suction can also sometimes be applied to help expand the lung, but one has to be careful not to expand it too quickly, as this can result in flash pulmonary edema.¹⁹

Discussion

There are many case reports in the literature of pneumothoraces after acupuncture.⁶⁻¹⁴ To review the literature, we searched for key words including *acupuncture*, *pneumothorax*, and *adverse events* in the PubMed database.

Acupuncture is a relatively safe form of CAM, especially when performed by trained professionals.^{3-5,20-22} The most commonly reported AEs of acupuncture are transient, such as pain, nausea, tiredness, bleeding, and vasovagal episodes.^{23,24} Some of the more serious reported AEs include pneumothorax, central nervous system injury, infection, epidural hematoma, subarachnoid hemorrhage, cardiac tamponade, gallbladder perforation, hepatitis, and death.^{23,24} Of these serious AEs, pneumothorax is by far the most frequent, with a prevalence of 0.8 to 2 in 100 000.²³⁻²⁶

Standards for acupuncture certification vary substantially across Canada, from a weekend course to 5 years of full-time study.²⁷⁻³⁴ In this case, the acupuncture was

performed by a Manitoba physiotherapist who was required to complete 100 hours of combined theoretical and practical training.³² For traditional acupuncturists, there are only regulatory authorities in 5 provinces—British Columbia, Alberta, Ontario, Quebec, and Newfoundland and Labrador—resulting in a wide discrepancy in levels of training.²⁷⁻³⁴ For example, there are no provincially mandated training requirements to practise as an acupuncturist in Manitoba. However, in British Columbia, acupuncturists require 2 years of university study as well as a minimum of 1900 hours of practical training.^{33,34} Although there is evidence to support that training in acupuncture increases its safety,²⁰⁻²² there is no research in Canada to determine whether provincial regulation has a meaningful effect on reducing AEs.

Complementary and alternative medicine is gaining traction in North America.^{15,16} Approximately 35% of patients routinely seek therapies such as acupuncture, chiropractic treatment, massage, homeopathy, yoga, tai chi, meditation, supplements and vitamins, and traditional healing practices such as Ayurveda or traditional Chinese medicine.³⁵

Many physicians have a guarded stance on CAM, often citing that it is not evidence based, which is not always true. There is growing evidence to support mind-body interventions such as mindfulness and biofeedback for treatment of acute or chronic pain, sleep disorders, and asthma; certain botanicals and supplements such as St John's wort for depression; calcium supplementation for symptoms of premenstrual syndrome; dark chocolate and coenzyme Q10 for hypertension; and a Mediterranean diet and omega-3 supplementation to decrease the risk of developing cardiovascular disease.³⁶⁻⁴⁴ However, Canada seems to be slow to embrace this change. In the United States, many family medicine residency programs require their residents to complete a 200-hour online integrative medicine course created by the University of Arizona in Tucson, and many clinics in the United States employ complementary medicine practitioners to work as part of multidisciplinary teams.⁴⁵ However, in Canada, the University of Manitoba in Winnipeg is the only school to offer an integrative medicine certificate program to its residents.

Only approximately one-third to half of patients will disclose their use of CAM to their primary care physicians for fear of disapproval.⁴⁶ The danger of this is that they become vulnerable to financial or bodily harm if they seek treatments that have no evidence to support them. Therefore, it is important for us to familiarize ourselves with the available research, so that we can counsel our patients on the risks and benefits. The danger of not doing so is not only losing the engagement of a growing population who seek a more balanced approach to their primary care, but more alarmingly, patients seeking out therapies that might present inherent harm.

Conclusion

More research is required to determine if more training in acupuncture reduces AEs. Primary care practitioners should be aware of the currently known risks and benefits of CAM so they can help patients make informed decisions about their care.

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Competing interests

None declared

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