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Bilateral Iatrogenic Pneumothorax After Acupuncture in a 26-Year-Old Woman Presenting With Cough, Pleuritic Chest Pain, and Tachycardia: A Case Report

Authors' Contribution:

Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Conflict of interest:

None declared

Patient:

Female, 26-year-old

Final Diagnosis:

Bilateral iatrogenic pneumothorax

Symptoms:

Persistent cough • pleuritic chest pain • difficulty taking a full breath

Clinical Procedure:

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Specialty:

Pulmonology

Objective:

Unusual clinical course

Background:

Acupuncture is widely used and generally safe, but pneumothorax is a serious complication of needling in the neck, shoulder, or upper back. Bilateral pneumothorax is rare and can present with nonspecific symptoms, delaying diagnosis. This case report highlights the presentation of immediate cough during upper-back needling, delayed presentation with bilateral pneumothorax despite preserved oxygenation, and radiographic regression during specialist-supervised conservative inpatient management.

Case Report:

A 26-year-old woman presented to the emergency department with persistent cough, pleuritic chest pain, and difficulty taking a full breath 2 days after acupuncture in the trapezius region. She was otherwise hemodynamically stable, with a blood pressure of 132/93 mm Hg and oxygen saturation of 100% on room air, but had marked tachycardia (140 beats/min at triage) and decreased right-sided breath sounds. Chest radiography showed bilateral apical pneumothoraces measuring 21 mm on the right and 17 mm on the left. Computed tomography pulmonary angiography excluded pulmonary embolism and confirmed bilateral pneumothoraces up to 23 mm without hemothorax. Preserved blood pressure and oxygenation, absence of respiratory compromise, and availability of specialist inpatient monitoring supported conservative management without pleural intervention. Serial radiographs showed regression to 6 mm on the right and 9 mm on the left before discharge. Recent acupuncture involving the neck, shoulder, or upper back should prompt consideration of pneumothorax in patients with chest pain, cough, dyspnea, or unexplained tachycardia, even when oxygen saturation is normal. Conservative inpatient management may be feasible only in carefully selected patients with bilateral procedure-related pneumothorax under close specialist clinical and radiographic surveillance.

Conclusions:

Keywords:

Acupuncture • Emergency Medical Services • Iatrogenic Disease • Pneumothorax

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Introduction

Acupuncture is commonly used for musculoskeletal concerns and generally has an acceptable safety profile when performed by qualified practitioners. In a prospective practice-based survey of 37 490 acupuncture treatments, most of the reported adverse events were mild, but serious events remain clinically relevant [1]. Pneumothorax is a rare but important traumatic complication of needling near the lung apex. In a Taiwanese population-based study, pneumothorax requiring hospitalization occurred after 0.87 per 1 000 000 acupuncture treatments overall and after 1.75 per 1 000 000 treatments in anatomically high-risk areas [2]. The pleural dome and lung apex lie close to certain lower-cervical, shoulder, trapezius, and upper-back needling sites, providing an anatomical basis for pleural injury.

Bilateral pneumothorax after acupuncture is uncommon, but published reports show various clinically relevant patterns, including delayed recognition and emergency department presentation after acupuncture-related pneumothorax [3], bilateral pneumothorax requiring chest-drain insertion after posterior neck and upper-back needling [4], and other iatrogenic bilateral pneumothorax cases after acupuncture [5]. Early symptoms such as cough, chest discomfort, pleuritic pain, or difficulty taking a deep breath may be nonspecific or initially under-recognized, delaying emergency assessment [3]. This case report was prepared in accordance with the CARE reporting checklist [6]. We report the case of a 26-year-old woman who developed cough immediately during trapezius/upper-back acupuncture performed with 6-cm needles and presented 2 days later with persistent cough, marked tachycardia, and pleuritic chest pain. This case highlights the combination of immediate cough during upper-back/trapezius needling as a possible early clue to pleural injury, delayed bilateral presentation despite preserved oxygenation, and radiographic regression during specialist-supervised conservative inpatient management in a carefully selected patient.

Case Report

A 26-year-old woman presented to the emergency department (ED) 2 days after an acupuncture session because of persistent cough, pleuritic chest pain, and difficulty taking a full breath. Further targeted history revealed that this was the patient's seventh acupuncture session. Previous sessions had primarily involved the temporomandibular joint and facial region, whereas the index session was performed for chronic protracted shoulder posture and muscle tension and involved the posterior lower cervical, trapezius, and upper-back regions bilaterally. A total of 12 needles were used, all of which were visible in a de-identified patient-provided photograph obtained during the procedure, documenting bilateral placement in these



Figure 1. De-identified patient-provided photograph obtained during the index acupuncture session, showing all 12 needles distributed bilaterally across the posterior lower cervical, trapezius, and upper-back regions. The image was cropped and identifying non-clinical features were masked to protect patient confidentiality; the clinically relevant skin surface and the number, positions, and visible orientations of the needles were not altered. The photograph does not establish the specific acupuncture points, insertion depth, needle trajectory, or the specific needle associated with the onset of coughing.

regions (Figure 1). The specific acupuncture points were not documented and could not be reliably reconstructed from the photograph. The physiotherapist who performed acupuncture subsequently confirmed that 6-cm needles had been used. During the procedure, the patient experienced sudden cough immediately after insertion of one of the upper-back needles but could not recall the side or exact insertion site associated with symptom onset. She did not initially suspect a serious complication and attributed the cough to a dry throat and prone positioning during treatment. She also noticed difficulty taking a full inspiration and sought emergency care because the cough and pleuritic chest pain persisted. She denied fever, trauma, hemoptysis, previous similar episodes, and recent respiratory infection.

Her body mass index was 20.8 kg/m², with a height of 164 cm and weight of 56 kg, and she reported being a lifetime non-smoker. Her medical history was notable for psoriasis and the use of an oral combined hormonal contraceptive. She had no known history of chronic pulmonary disease, previous pneumothorax, or thoracic surgery.

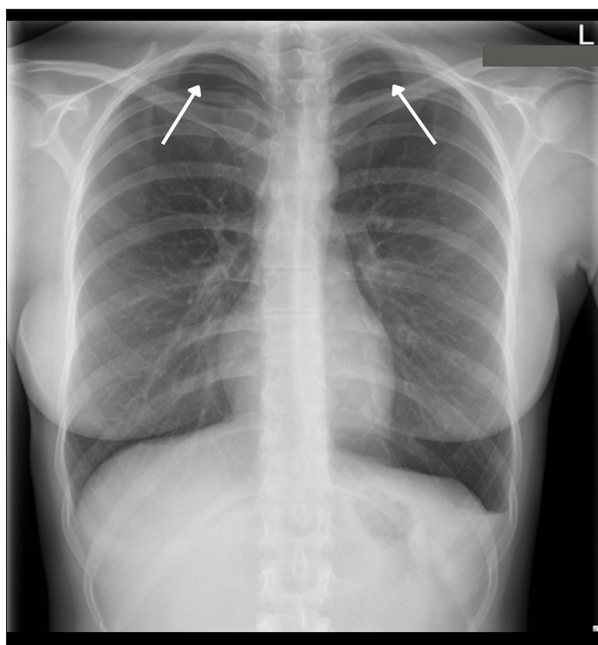


Figure 2. Posteroanterior chest radiograph obtained in the emergency department showing bilateral apical pneumothoraces (arrows), greater on the right side.

On admission, the patient was in good general condition and remained fully oriented. Physical examination revealed decreased breath sounds on the right side. Vital signs showed a temperature of 36.5 °C, heart rate of 140 beats/min, blood pressure of 132/93 mm Hg, respiratory rate of 18 breaths/min, and oxygen saturation of 100% on room air. On subsequent clinical reassessment, her heart rate decreased to 120 beats/min. A 12-lead electrocardiogram recorded sinus tachycardia at 115 beats/min and showed no significant ST-T-segment abnormalities. No treatment specifically directed at reducing the heart rate was administered, and no definitive cause of the tachycardia was documented. Initial laboratory tests, including complete blood count, coagulation studies, electrolytes, and serum creatinine, were otherwise unremarkable. D-dimer, measured before CTPA, was elevated at 889 ng/mL FEU, above the local diagnostic cutoff of 500 ng/mL FEU. No formal pretest probability score for pulmonary embolism was documented before imaging. Capillary blood gas analysis showed mild respiratory alkalosis, with pH 7.46, $p\text{CO}_2$ 33.6 mm Hg, and $p\text{O}_2$ 86.2 mm Hg.

Initial chest radiography obtained on February 27, 2026 demonstrated bilateral apical pneumothoraces, with maximum apical pleural air-space thickness of 21 mm on the right and 17 mm on the left (**Figure 2**). Unless otherwise stated, the millimeter measurements reported below refer to maximum apical pleural air-space thickness on the respective imaging study. Because the initial differential diagnosis included pulmonary embolism—given pleuritic chest pain, marked tachycardia, and combined hormonal contraceptive use, the elevated



Figure 3. Axial contrast-enhanced chest computed tomography image confirming bilateral apical pneumothoraces (arrows). The full CT examination showed no hemothorax, subcutaneous emphysema, significant mediastinal shift, visible subpleural blebs or bullae, or radiological features of tension pneumothorax.

D-dimer—as well as hemothorax related to possible needle-induced pleural injury, CT pulmonary angiography (CTPA) was performed on February 27, 2026. CTPA excluded pulmonary embolism and confirmed bilateral apical pneumothoraces, with maximum apical pleural air-space thickness of up to 23 mm bilaterally (**Figure 3**). No hemothorax was identified. The full CT examination showed no subcutaneous emphysema, significant mediastinal shift, or radiological features of tension pneumothorax. No visible subpleural blebs or bullae were present on CT. In the context of immediate cough during documented upper-back/trapezius needling, these findings made primary spontaneous pneumothorax less likely and supported an acupuncture-related mechanism. Small nonspecific right-sided ground-glass pulmonary opacities of indeterminate etiology were noted, while the remaining lung parenchyma and mediastinum were unremarkable.

The patient was transferred to a specialist pulmonology and thoracic surgery center for further management. Because she remained normotensive and normoxemic, without respiratory failure, hemothorax, significant mediastinal shift, or radiological features of tension pneumothorax, the receiving specialist team selected inpatient conservative management. This was consistent with the receiving center's usual practice of inpatient observation without pleural drainage for pneumothoraces measuring less than 25 mm; in this patient, the maximum apical pleural air-space thickness was 23 mm. Treatment consisted of close clinical observation, analgesia, and serial chest radiographs. Low-flow oxygen via nasal cannula at 1-2 L/min was administered during the first several hours as part of the receiving center's routine management approach for conservatively treated pneumothorax, irrespective of baseline oxygen saturation. It was subsequently discontinued because oxygen

Table 1. Timeline of symptom onset, diagnostic imaging, treatment course, and follow-up.

Time point	Clinical event
Day 0	A total of 12 needles were placed bilaterally in the posterior lower cervical, trapezius, and upper-back regions; 6-cm needles were used. Sudden cough began during the procedure; the patient could not identify the side or specific needle associated with symptom onset
Day 0-2	Persistent cough, pleuritic chest pain, and difficulty taking a full breath before ED presentation
Day 2 (February 27, 2026)	ED presentation: heart rate 140 beats/min at triage, decreasing to 120 beats/min on reassessment and 115 beats/min on electrocardiography; blood pressure 132/93 mm Hg; oxygen saturation 100% on room air; decreased right-sided breath sounds
Day 2 (February 27, 2026)	Laboratory evaluation: D-dimer 889 ng/mL FEU (local diagnostic cutoff 500 ng/mL FEU); no formal pretest probability score for pulmonary embolism was documented. Initial chest radiograph: bilateral apical pneumothoraces, 21 mm on the right and 17 mm on the left
Day 2 (February 27, 2026)	CT pulmonary angiography: no pulmonary embolism; bilateral apical pneumothoraces up to 23 mm bilaterally; no hemothorax, subcutaneous emphysema, significant mediastinal shift, radiological features of tension pneumothorax, or visible subpleural blebs or bullae
Hospital day 1	Transfer to a specialist pulmonology and thoracic surgery center. Inpatient conservative management was selected under the center's usual practice for pneumothoraces measuring less than 25 mm and case-specific specialist assessment. Management included observation, analgesia, serial chest radiography, and low-flow oxygen at 1-2 L/min irrespective of baseline oxygen saturation. Unilateral small-bore chest tube placement was not considered, and no pleural intervention was performed
February 28, 2026	Follow-up chest radiograph: persistent bilateral pneumothorax, 15 mm on the right and 20 mm on the left.
March 2, 2026	Follow-up chest radiograph: bilateral regression, with reduction to 6 mm on the right and 9 mm on the left; the patient was discharged home in good general condition after 3 days of observation
Day 14	Outpatient thoracic surgery review with repeat chest radiography: no radiographic evidence of residual pneumothorax; the patient was clinically well
Day 45	Repeat outpatient clinical assessment and chest radiography: no abnormalities and no recurrence of pneumothorax; the patient was discharged from further thoracic surgery follow-up

saturation remained normal on room air. Unilateral small-bore chest tube placement was not considered during the initial specialist assessment, and no pleural aspiration, chest tube drainage, or surgical intervention was performed. CT and chest-radiographic measurements were interpreted within their respective imaging modalities, and interval change was assessed primarily using serial chest radiographs. Follow-up chest radiography on February 28, 2026 showed persistent bilateral pneumothoraces, measuring 15 mm on the right and 20 mm on the left. The small left-sided increase from 17 mm to 20 mm was interpreted cautiously because differences in projection, inspiratory effort, or measurement assessment could have contributed; a minor true interval increase could not be excluded. A subsequent radiograph obtained on March 2, 2026 showed bilateral regression, with reduction to 6 mm on the right and 9 mm on the left. The patient was discharged home in good general condition after 3 days of observation. She received case-specific advice from the treating team to avoid moderate and heavy physical exertion for 6 weeks and to attend outpatient thoracic surgery follow-up with repeat chest radiography. At outpatient thoracic surgery follow-up on day 14, repeat chest radiography showed complete resolution of

the pneumothoraces, with no radiographic evidence of residual pleural air. At follow-up on day 45, repeat clinical assessment and chest radiography showed no abnormalities or recurrence of pneumothorax, and the patient was discharged from further thoracic surgery follow-up.

The patient reported that she had not initially suspected a serious complication because the cough began during a musculoskeletal acupuncture session and she attributed it to a dry throat, prone positioning, or transient irritation. During the 2 days before presenting to the ED, she limited physical activity and tried not to overexert herself, but sought medical attention when the cough persisted and pleuritic chest pain and difficulty taking a full breath continued. After serial outpatient follow-up confirmed complete radiographic resolution and no recurrence of the pneumothoraces, she reported feeling relief that the condition had resolved without pleural drainage or surgery.

A timeline of symptom onset, diagnostic imaging, treatment course, and follow-up is shown in **Table 1**.

Discussion

The contribution of this report is incremental rather than wholly novel. Its 3 most transferable lessons are: (1) immediate cough during upper-back/trapezius needling may be an early clue to pleural injury; (2) bilateral acupuncture-related pneumothorax may present after a delay despite preserved oxygenation; and (3) conservative inpatient management may be feasible only in carefully selected patients with preserved blood pressure and oxygenation, without respiratory failure, pulmonary embolism, hemothorax, or radiological features of tension pneumothorax, and with subsequent radiographic regression under specialist inpatient monitoring. In this way, this case report refines rather than overturns the existing literature on bilateral acupuncture-related pneumothorax.

Published cases of bilateral pneumothorax after acupuncture show a wide clinical spectrum. At the severe end, Mohammad described bilateral tension pneumothorax after acupuncture, with respiratory failure and the need for bilateral chest tubes after failed needle aspiration [7]. Kashiura et al reported the case of a 57-year-old woman who developed dyspnea and cough 2 hours after acupuncture at 16 sites from the posterior neck to the back; despite the reported use of 3-cm needles, she required bilateral chest drainage [4]. Ferro et al also reported iatrogenic bilateral pneumothorax due to acupuncture, further supporting that bilateral disease is a recognized but uncommon complication [5]. In the ED case series by Th'ng et al, a patient presented on day 2 after acupuncture with normal oxygen saturation but bilateral pneumothoraces, including a large right-sided pneumothorax that required right-sided Seldinger chest drain insertion [3]. Taken together, these reports establish that bilateral acupuncture-related pneumothorax can range from delayed or normoxemic presentations to drainage-requiring and life-threatening disease. The present case adds a narrowly defined example of delayed but normoxemic bilateral presentation, immediate cough during upper-back/trapezius needling, CT exclusion of pulmonary embolism and hemothorax, and radiographic regression during conservative inpatient management in a carefully selected patient who remained normotensive and normoxemic despite tachycardia. Against this background, the case should be interpreted as refining diagnostic and management boundary conditions rather than as establishing a general rule for conservative treatment.

The present case differs from these previous reports in several respects. The patient was young, lean, and a lifetime non-smoker, with no previous pneumothorax, lung disease, or thoracic surgery. Her cough began immediately after insertion of one of the needles into the upper back, but she initially attributed the symptom to a dry throat and prone positioning. This mirrors the delayed recognition described by Th'ng et al, in which

patients reported symptoms after acupuncture but did not initially receive urgent medical assessment [3]. The present case therefore reinforces that cough, pleuritic pain, difficulty taking a full inspiration, or otherwise unexplained tachycardia after recent needling of the neck, shoulder, trapezius, supraclavicular region, or upper back should prompt targeted questioning and early chest imaging, even when oxygen saturation is normal.

Another important comparison is with reports in young or lean women. Nishie et al described bilateral pneumothorax in a 31-year-old female physician with a BMI of 16.9 and no history of respiratory disease or smoking, emphasizing that needles can reach the pleura in anatomically thin areas around the suprascapular/levator scapulae region [8]. In the present case, the BMI was higher, at 20.8 kg/m², but the needling sites were in a similarly high-risk cervicothoracic region. All 12 needles were visible in the de-identified procedural photograph, which confirmed bilateral placement across the posterior lower cervical, trapezius, and upper-back regions; the use of 6-cm needles was subsequently confirmed. These details strengthen the plausibility of a procedure-related mechanism, although the 6-cm needle length does not establish actual insertion depth or trajectory. The photograph does not establish the specific acupuncture points or identify the side or specific needle associated with the immediate onset of coughing.

The anatomical mechanism is most plausibly pleural injury during needling near the pleural dome. The trapezius, suprascapular, and posterior lower-cervical/upper-thoracic regions are close to the lung apex, and GB21/Jianjing represents an anatomically relevant high-risk point within this broader region. Imaging-based studies have shown that safe needling depth in the neck and shoulder region varies with sex, body habitus, posture, and respiration [9,10]. Although direct proof of pleural puncture was not available, the temporal relationship, documented upper-back/trapezius needling region, confirmed use of 6-cm needles, immediate cough during needle insertion, bilateral apical distribution, and absence of visible subpleural blebs or bullae on CT support acupuncture-related pleural injury as the most plausible mechanism. Primary spontaneous pneumothorax cannot be excluded with absolute certainty, but the clinical sequence and imaging findings make it less likely in this case. The small right-sided ground-glass opacities remained nonspecific, and neither the radiology report nor the clinical record supported interpreting them as evidence of a needle tract, pulmonary contusion, microhemorrhage, or direct needle-related parenchymal injury.

Management of bilateral procedure-related pneumothorax should be cautious, individualized, and guided by clinical physiology, symptoms, imaging findings, complications, and early radiographic course. Bilaterality should be regarded as a high-risk feature, and such patients should not be managed

with simple outpatient observation. The present case report should not be interpreted as supporting routine conservative management of bilateral pneumothorax. Rather, it illustrates a narrowly defined scenario in which a non-invasive strategy was used in a normotensive and normoxemic patient without respiratory failure, hemothorax, pulmonary embolism, significant mediastinal shift, or radiological features of tension pneumothorax, under specialist inpatient monitoring with serial chest radiographs. The initial strategy reflected the receiving center's usual practice of inpatient observation without pleural drainage for pneumothoraces measuring less than 25 mm, combined with case-specific specialist assessment; unilateral small-bore chest tube placement was not considered. Published acupuncture-related bilateral cases show why this boundary is important: some patients required pleural drainage or urgent intervention [3,4,7]; therefore, conservative management in the present case should be viewed as a carefully monitored single-case observation rather than as a general management rule. Continued conservative management in the present case was supported by preserved oxygenation, absence of complications, and subsequent radiographic regression during inpatient observation. The transient left-sided increase from 17 mm to 20 mm was interpreted cautiously because differences in projection, inspiratory effort, or measurement assessment may have contributed, although a small true interval increase could not be excluded; subsequent radiographs demonstrated bilateral regression.

Evidence directly addressing acupuncture-related bilateral iatrogenic pneumothorax is lacking. Observational data in traumatic pneumothorax and evidence and guidelines for primary spontaneous pneumothorax support more individualized management in selected patients, but these data cannot be directly generalized to procedure-related bilateral pneumothorax [11-13]. In the present case, conservative treatment was not passive observation: it was specialist inpatient management with serial clinical assessments, analgesia, brief low-flow oxygen, and repeated chest radiography. Continued non-invasive management was supported by preserved blood pressure and oxygenation, absence of tension physiology or hemothorax, CT exclusion of pulmonary embolism, and subsequent radiographic improvement on serial chest radiographs.

This case report has several limitations. Although all 12 needles were visible in the de-identified procedural photograph and bilateral placement in the posterior lower cervical, trapezius, and upper-back regions was established, the specific acupuncture points, insertion depth, needle trajectory, and duration of needle retention were not recorded. The patient could not identify the side or specific needle associated with the immediate onset of coughing. Direct proof of pleural puncture was not available. The absence of visible subpleural blebs or bullae on CT makes primary spontaneous pneumothorax less

likely but does not exclude it with absolute certainty. Finally, this is a single case with follow-up limited to 45 days; therefore, the conservative approach described here should not be generalized to all patients with bilateral pneumothorax. The 25-mm observation threshold and routine use of low-flow oxygen reflected local center practice rather than evidence directly applicable to bilateral acupuncture-related pneumothorax, and unilateral small-bore chest tube placement was not considered. The practical message is narrower: new cough during cervicothoracic needling should trigger suspicion of pleural injury, normal oxygen saturation does not exclude bilateral pneumothorax, and non-invasive management should be considered only in selected patients without hemodynamic or respiratory compromise, under specialist inpatient care with close clinical and radiographic surveillance.

Conclusions

Bilateral pneumothorax should be considered promptly in any patient presenting with chest pain, cough, dyspnea, or tachycardia after recent acupuncture involving the neck, shoulder, or upper back. Even when the patient is hemodynamically stable and oxygenation is preserved, bilateral pneumothorax may be present. This case report underlines the value of targeted history-taking and immediate chest imaging in the ED and illustrates that conservative inpatient management may be feasible only in carefully selected, clinically stable patients with bilateral procedure-related pneumothorax when close specialist clinical and radiographic surveillance is available.

Department and Institution Where Work Was Done

Emergency Department, University Hospital No. 2 (Dr. Jan Bizioł Memorial Hospital), Bydgoszcz, Poland.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying anonymized images.

Ethics Approval

Ethical review and approval were not required for this single-patient retrospective case report according to local institutional requirements.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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