Case Report

Eurasian Journal of Critical Care

A Rare Complication Following Combined Dry Needling and Cupping Therapy: Pneumothorax

Ahmet Taha Özatak[1] Lilyana Mehmetaj[2]

1. Department of Emergency Medicine, Istanbul Bagcilar Health Practice and Research Center, Istanbul, Turkey
2. Department of Emergency Medicine, Istanbul Basaksehir Cam and Sakura City Health Practice and Research Center, Istanbul, Turkey

Abstract

Introduction: Dry needling and cupping therapy are widely utilized for musculoskeletal pain. While generally safe, thoracic applications carry the risk of iatrogenic pneumothorax. We present a rare case of pneumothorax following the combined application of these therapies.

Case Report: A 36-year-old female presented to the emergency department with sudden chest pain and dyspnea four hours after receiving combined dry needling and cupping therapy for back pain. Physical examination revealed decreased breath sounds on the right hemithorax. Chest X-ray and Computed Tomography confirmed a large right-sided pneumothorax. Tube thoracostomy was performed. The patient was discharged on the fourth day with full recovery.

Introduction: The combination of deep needling and the negative pressure of cupping may create a synergistic risk for pleural injury. Emergency physicians should utilize advanced imaging, such as CT or ultrasound, for early diagnosis in symptomatic patients.

Keywords: Dry needling, cupping therapy, pneumothorax, emergency medicine, iatrogenic complications

Introduction

With the increasing demand for non-pharmacological pain management, dry needling (DN) has become a widely utilized modality for musculoskeletal conditions. Recent meta-analyses confirm its efficacy in restoring function and reducing pain intensity in myofascial pain syndromes [1]. Similarly, cupping therapy is frequently employed as an adjunctive treatment to enhance local hemodynamics via negative pressure [2]. While these therapies are generally safe when performed individually, their combined application in the thoracic region warrants caution. Iatrogenic pneumothorax remains the most significant life-threatening complication of thoracic needling procedures [3]. This report presents a rare case of pneumothorax following a session of combined dry needling and cupping therapy and discusses the potential synergistic mechanism of injury.

Case Report

A 36-year-old female presented to the emergency department with sudden onset chest pain and shortness of breath. She had no notable past medical history. Four hours prior to admission, she had undergone combined dry needling and cupping therapy for back pain. The procedure involved deep dry needling (using 0.25 x 40 mm needles) of the right upper trapezius, supraspinatus, and thoracic paraspinal muscles (T3-T6 levels), followed by 15 minutes of dry cupping.

On physical examination, initial vital signs were stable (BP 114/73 mmHg, HR 81 bpm, SpO_2 96%), although the patient was tachypneic (24/min). Auscultation revealed significantly diminished breath sounds on the right hemithorax. Inspection of the back showed needle insertion marks and circular ecchymoses consistent with cupping therapy in the paravertebral region (Figure 3).

A posteroanterior chest X-ray revealed a right-sided pneumothorax involving approximately 40% of the

Corresponding author: Serdar Ozdemir
e-mail: dr.serdar55@hotmail.com
• **Received:** 12.02.2026 • **Revision:** 09.04.2026 • **Accepted:** 09.04.2026
DOI: 10.55994/ejcc.1780213

Cite this article as: Özatak AT, Mehmetaj L. A Rare Complication Following Combined Dry Needling and Cupping Therapy: Pneumothorax. Eurasian Journal of Critical Care. 2026;8(1): 55-57

ORCID:
Ahmet Taha Özatak: orcid.org/0000-0003-1848-4077
Liljana Mehmetaj: orcid.org/0000-0002-7049-9914

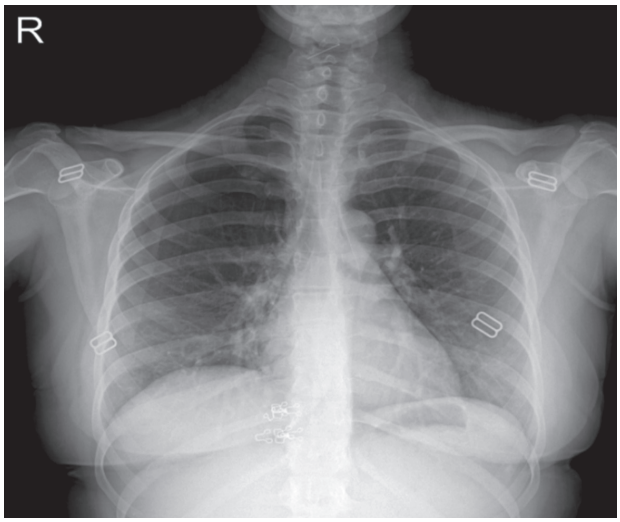

Figure 1. Posteroanterior chest X-ray obtained on admission showing a clear visceral pleural line and a radiolucent area on the right side, consistent with pneumothorax.

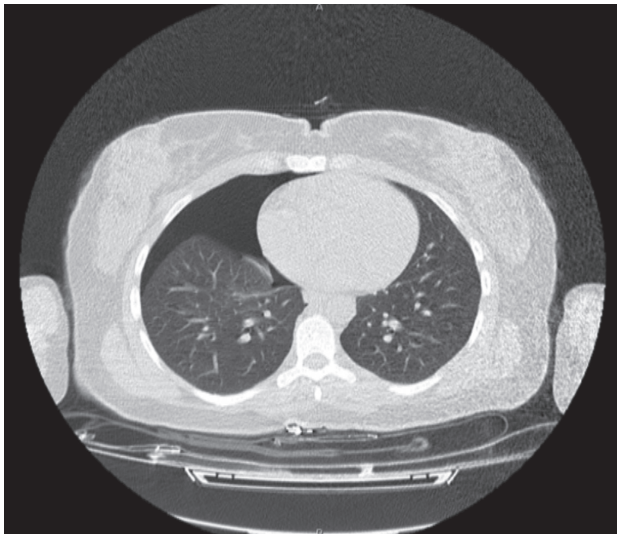

Figure 2. Non-contrast thorax Computed Tomography (CT) scan confirming a large right-sided pneumothorax causing partial collapse of the lung parenchyma.

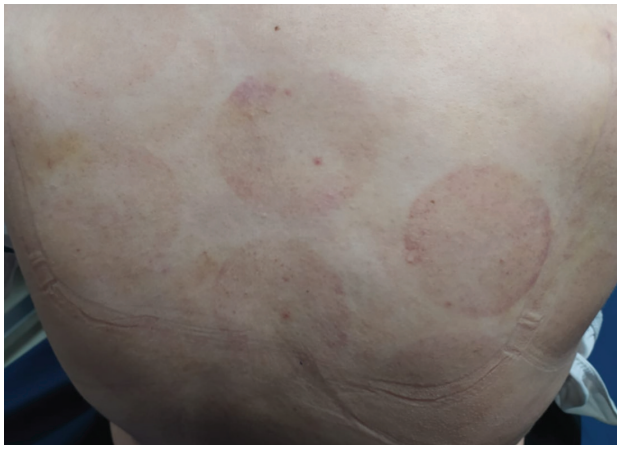

Figure 3. View of the patient's back showing needle puncture marks and circular ecchymosis consistent with cupping therapy on the right paraspinal region.

hemithorax (Figure 1). To evaluate the full extent of the collapse and rule out bullous disease, a thoracic Computed Tomography (CT) was performed, confirming a large right-sided pneumothorax (Figure 2).

Tube thoracostomy was performed immediately, resulting in lung re-expansion. The patient was admitted for observation. By the third day, the air leak had ceased, and the chest tube was removed following a successful clamp trial. She was discharged on the fourth day with full recovery.

Discussion

This case highlights the risks associated with deep dry needling in the thoracic region, particularly when combined with vacuum therapies. The primary risk factor is the depth of needle insertion relative to the pleura. In the medial scapular and paraspinal regions, the pleura can be as superficial as 10–20 mm [4]. Systematic reviews suggest that while deep needling provides pain relief, it requires strict adherence to anatomical landmarks to avoid visceral injury [5].

In our case, the procedure involved the trapezius and rhomboid muscles (T3–T6 levels). As noted by Patel et al. [3] and Uzar et al. [6], "deep" needling in these high-risk zones without image guidance significantly increases the probability of pleural breach.

A critical aspect of this case is the addition of cupping therapy. Cupping creates a negative pressure (vacuum) to induce hyperemia [2]. We hypothesize a "synergistic injury" mechanism: a micro-defect in the visceral pleura caused by the needle—which might otherwise have been self-sealing—could be exacerbated by the subsequent vacuum effect of the cups [7].This negative pressure gradient may facilitate the movement of air from the lung parenchyma into the pleural space [8].

Diagnostically, emergency physicians must be vigilant. While chest X-ray is the standard initial imaging modality, it has limited sensitivity compared to CT, especially in supine patients [9]. Recently, Point-of-Care Ultrasound (POCUS) has emerged as a superior diagnostic tool. A 2023 meta-analysis by Tian et al. demonstrated that thoracic ultrasound has higher diagnostic accuracy than chest X-ray for detecting pneumothorax in emergency settings [10]. Therefore, if X-ray findings are equivocal in a symptomatic patient after acupuncture or cupping, POCUS or CT should be utilized promptly.

Conclusion

Although dry needling and cupping are widely used, their combination in the thoracic region carries a risk of

pneumothorax. The negative pressure of cupping may exacerbate needle-induced pleural injuries. Practitioners must adhere to safe depth limits, and emergency physicians should maintain a high index of suspicion, utilizing advanced imaging like ultrasound or CT for rapid diagnosis.

Informed Consent Statement: The case report has been written in an anonymous characteristic, thus secret and detailed data about the patient has been removed. Editor and reviewers can know and see these detailed data. These data are backed up by editor and by reviewers.

Conflict of Interest: The authors declare that there is no conflict of interest regarding the publication of this case report.

Acknowledgments : The authors utilized artificial intelligence tools (Gemini,Google) solely for language editing and grammar correction during the preparation of this manuscript. The final content was reviewed, verified, and authorized by the authors.

References

1. Valera-Calero JA, Fernández-de-Las-Peñas C, Navarro-Santana MJ, Plaza-Manzano G. Efficacy of dry needling and acupuncture in patients with fibromyalgia: a systematic review and meta-analysis. Int J Environ Res Public Health. 2022;19(16):9904.
2. Jia Y, Dong X, Chai Y, Bai Z, Sun T, Hou X. Effects of cupping therapy on chronic musculoskeletal pain and collateral problems: a systematic review and meta-analysis. BMJ Open. 2025;15(5):e087340.
3. Patel N, Patel M, Poustinchian B. Dry needling–induced pneumothorax. J Osteopath Med. 2019;119(1):59-62.
4. Halle JS, Halle RJ. Pertinent dry needling considerations for minimizing adverse effects–part one. Int J Sports Phys Ther. 2016;11(4):651.
5. Alhakami AM, Sahely A, Alshami AM. Deep versus superficial dry needling for neck pain: a systematic review of randomised clinical trials. Medicina (Kaunas). 2025;61(10):1832.
6. Uzar T, Turkmen I, Menekse EB, Dirican A, Ekaterina P, Ozkaya S. A case with iatrogenic pneumothorax due to deep dry needling. Radiol Case Rep. 2018;13(6):1246-8.
7. Huber R, Emerich M, Braeunig M. Cupping–is it reproducible? Experiments about factors determining the vacuum. Complement Ther Med. 2011;19(2):78-83.
8. Cage SA. Safety of Applying Cupping Therapy to Treat Musculoskeletal Pathologies. RISM. 2021;2(1):1-4.
9. Wilkerson RG, Stone MB. Sensitivity of bedside ultrasound and supine anteroposterior chest radiographs for the identification of pneumothorax after blunt trauma. Acad Emerg Med. 2010;17(1):11-7.
10. Tian H, Zhang T, Zhou Y, Rastogi S, Choudhury R, Iqbal J. Role of emergency chest ultrasound in traumatic pneumothorax. An updated meta-analysis. Med Ultrason. 2023; 25(1):66-71.