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## Case Report

# A case with iatrogenic pneumothorax due to deep dry needling

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## ABSTRACT

Deep dry needling is an evidence-based treatment technique that is accepted and used by physical therapists for treatment of musculoskeletal pain. We present a case of iatrogenic pneumothorax due to deep dry needling over the posterior thorax. A 36-year old presented with right chest pain 2 hours after dry needling for pain in his back muscles. Chest radiograph suggested small right pneumothorax and the finding was confirmed by computed tomography. Not only should practitioners and their patients be aware of potential complications of dry needling, but also physicians who might see patients with complications.

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## Introduction

Pneumothorax is a very rare but serious complication associated with acupuncture and dry needling around the thoracic region. Dry needling is a technique where a solid, very fine needle is inserted into a soft tissue in the body. Trigger point dry needling is an invasive procedure where an acupuncture needle is inserted into the skin and muscle. It is aimed at myofascial trigger points which are hyperirritable spots in skeletal muscle that are associated with a hypersensitive palpable nodule in a taut band. Trigger point dry needling

can be carried out a superficial or deep tissue level. Two techniques commonly used by physiotherapists are superficial dry needling and deep dry needling (DDN). Both techniques are used in the treatment of pain and referred pain from myofascial trigger points MTrp but superficial dry needling can also be used for treating pain from ligaments and joints. The primary areas associated with acupuncture or dry needling-induced pneumothorax are the regions of thorax including the upper trapezius, paraspinal, medial scapular, and subclavicular regions as seen in [Figure 1 \[1–3\]](#). Present a case with iatrogenic pneumothorax due to DDN over the thorax.

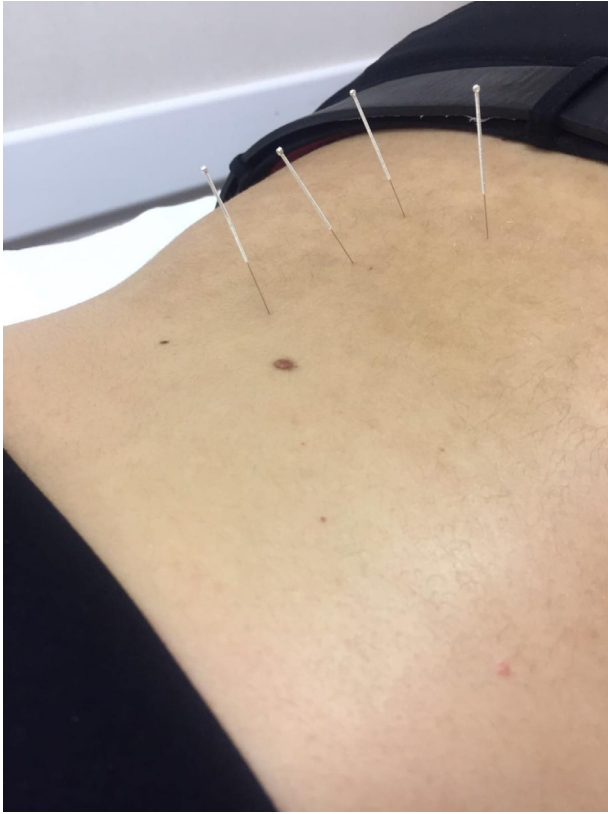
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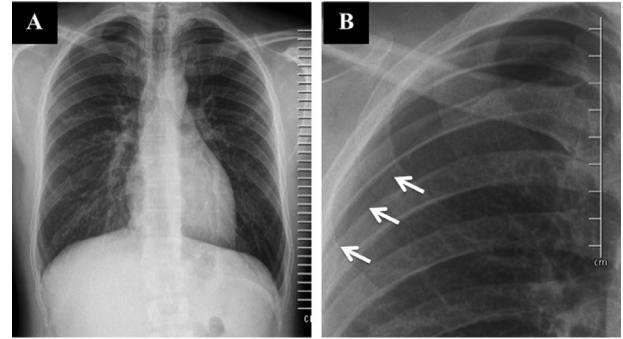
**Fig. 1** – The technique of deep dry needling of thorax including the paraspinal, medial scapular, and subclavicular regions.

### Case presentation

A 36-year-old male was admitted to our emergency department with a complaint of right chest pain. There was no relevant past medical history. He had undergone dry needling for pain in his back muscles 2 hours earlier and was now experiencing chest pain. Chest auscultation revealed the decreased breath sounds on the right hemithorax. Chest radiography initially seemed to be normal (Fig. 2A), but a minimal pneumothorax was seen as a thin line on the right hemithorax (Arrows in Fig. 2B). High-resolution computed tomography confirmed the iatrogenic pneumothorax due to DDN over the right hemithorax (Figs. 3 and 4). The entrance areas of the needles to lung parenchyma were also seen in Figure 5A. The areas of DDN on patient's chest were shown in the Figure 5B. The pneumothorax was fully recovered without any intervention on the third day (Fig. 6).

### Discussion

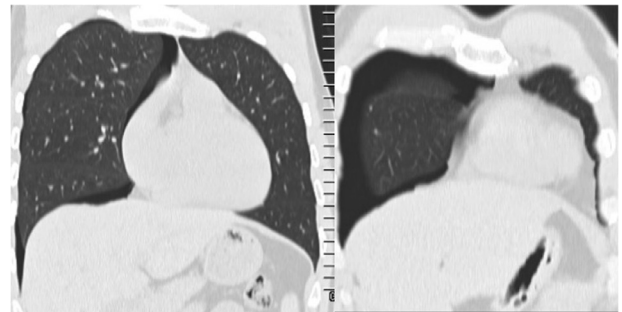
Dry needling is an evidence-based treatment technique that is accepted and used by physical therapists. This treatment approach focuses on releasing or inactivating muscular trigger points to decrease pain, reduce muscle tension, and assist patients with an accelerated return to active rehabilitation [4].



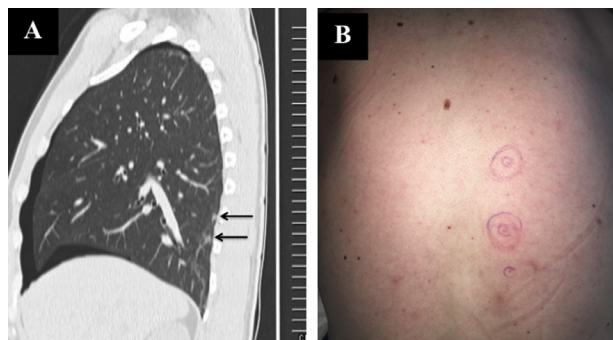
**Fig. 2** – Chest roentgenography is looking as normal (Fig. 1A) but when looked carefully, pneumothorax appears as thin line there in the visceral pleura on the right hemithorax (arrows in Fig. 1B).



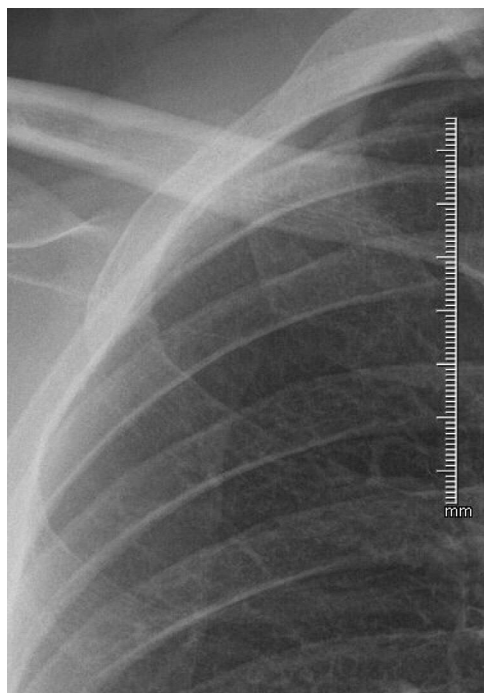
**Fig. 3** – High-resolution computed tomography (HRCT) demonstrated the iatrogenic pneumothorax due to deep dry needling (DDN) over the right hemithorax.



**Fig. 4** – High-resolution computed tomography (HRCT) demonstrated the iatrogenic pneumothorax due to deep dry needling (DDN) over the thorax (Coronal plane).



**Fig. 5** – The entrance area of the needles to lung parenchyma are also seen in **Figure 4A** (arrows). The areas of DDN are showing on the patient's chest in the **Figure 4B**. DDN, deep dry needling.



**Fig. 6** – The pneumothorax was fully recovered without any intervention on the third day. There is no pneumothorax line on chest roentgenography.

When done correctly, this can be an effective way to minimize the chance of penetrating an unwanted region, such as the pleural cavity. Accidents can happen, however, when the needle slips along the side of a rib and penetrates further than anticipated, with the result compromising the pleural lining and a pneumothorax. Several studies have demonstrated that needling of the serratus anterior, rhomboids, supraspinatus, iliocostalis, and the lower cervical paraspinals can result in pneumothorax. The largest prospective survey of adverse events of acupuncture found 2 cases of pneumothorax related to 2.2 million acupuncture sessions in 0.22 million patients, but we do not know what proportion of the 2.2 million treatments surveyed involved needling over the thorax. DDN over the thorax is very likely to be associated with a higher inci-

dence of pneumothorax [5–7]. Respiratory failure was reported in a patient with iatrogenic bilateral pneumothorax and subsequent tension pneumothorax due to dry needling used in the treatment of myofascial pain [8].

In conclusion, not only must physiotherapists and their patients be aware of potential complications of DDN, but also doctors who might see patients with complications of this procedure. Detailed history-taking and clinical suspicion are important for the definitive diagnosis of pneumothorax in these cases.

## Consent

Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

## Authors' contributions

TU, IT, EBM, AD, and so have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. All authors read and approved the final manuscript.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.radcr.2018.08.019](https://doi.org/10.1016/j.radcr.2018.08.019).

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