Reminder of important clinical lesson

Unusual bilateral pneumothoraces due to zone I neck stab wound

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Summary

Pneumothorax is a known complication of spontaneous or traumatic chest events. Trauma is the most common cause of pneumothorax all over the world. The majority of penetrating pneumothoraces are due to stab wound in Iran. The unilateral pneumothorax commonly is due to chest stab wound but it can be caused by neck stab wound, too. Ipsilateral pneumothorax is an uncommon complication of neck stab wound in zone I. We reported a rare case of bilateral pneumothoraces due to usual unilateral neck stab wound.

BACKGROUND

Pneumothorax and/or haemothorax can be possible secondary to zone I penetrating neck wound. It can be seen as ipsilateral pneumothorax/haemothorax or both. But we have presented unusual bilateral pneumothoraces due to unilateral neck wound. This case is the first in the published literature.

Case presentation A 26-year-old man complaining of stab wound on the left side of the neck in zone I presented to our emergency department. The wound was 6 cm and about 10 cm in length and depth, respectively in the left supra clavicular region. According to patient history, the wound was due to a combat knife with 15 cm blade penetrated into the neck. After initial investigation, it was determined that the knife trajectory was towards midline (sagittal plane) with an estimated 40° angle. The patient was stable, had no respiratory distress and had a good appearance. The wound was not air sucking, no active bleeding was seen. Subcutaneous emphysema on the left side of the lower neck was palpated. The respiratory sounds were decreased in the left-sided hemithorax. The other physical examination was unremarkable. A chest x-ray was done (figure 1).

A bilateral visceral line was seen due to both-sided pneumothoraces. Chest tubes were inserted in both chest cavities (figure 1). In addition to air bubbling in both sides, blood in the chest bottle was seen just on the left side.

Considering the stab wound in zone I neck, standard investigations were done to exclude tracheobronchial, oesophageal and vascular injuries. Bronchoscopy was normal, in oesophagogram no extravasation was seen and was reported as normal by the radiologist (figure 2). After normal contrast study, an endoscopy was done for this patient that was reported normal.

Spiral chest and neck CT angiography was reported normal in vasculature by the radiologist (figures 3 and 4). Chest computed axial tomography scan just showed soft tissue emphysema and chest tubes and re-expansion of both lungs (figure 5).

OUTCOME AND FOLLOW-UP

In the patient's 3 months follow-up, he was in good health without any complications.

DISCUSSION

Simultaneous bilateral pneumothorax is a rare clinical event, the causes of which include trauma, tumour, tuberculosis and iatrogenic situations arising from central line placement or intubation.^{1–3} Pneumothorax occurs in 15–20% of patients who suffer blunt trauma,³ but the probability of bilateral pneumothorax occurring in association with thoracic trauma and spontaneous pneumothorax is a rare event.³ Traumatic bilateral pneumothorax could occur due to penetrating objects such as stab or acupuncture needles.⁴ It can progress to bilateral tension

Figure 1 Chest x-ray demonstrating bilateral pneumothorax 135×132 mm (96×96 DPI).

Figure 2 Oesophagogram demonstrating no extravasations 121×132 mm (96×96 DPI).

Figure 4 Neck zone I CT scan demonstrating left-sided soft tissue emphysema, small hemothorax, intact vasculature with no extravasation, 132×132 mm (96 ×96 DPI).

Figure 3 Lower neck CT scan illustrating left-sided soft tissue emphysema and normal vascular structure 132×132 mm (96 DPI×96 DPI).

Figure 5 Spiral chest CT scan with bilateral chest tube and complete lung expansion 132×132 mm (96×96 DPI).

pneumothorax, a life-threatening condition. According to a literature review, the exact mechanism for simultaneous bilateral pneumothorax was not explained.

Although the exact cause and mechanism for right-sided pneumothorax in this case was not found, we have two theories for this unusual finding. First, it is possible that the right-sided pneumothorax had occurred due to direct left neck-penetrating trauma. Considering the longitudinal trajectory of the stab and regarding vital structures, such as trachea, main bronchus, vascular structures

and oesophagus that were intact after complete accurate investigation despite being located in very intimate crowded area, it is a rare presentation.

Second, we suggest another theory for the cause of right-sided pneumothorax. It may consider some microscopic connections between two pleural cavities. When each lung is violated by any penetrating objects, the pneumothorax may produce in the ipsilateral pleural cavity. In few cases because of some connections between two pleural cavities, the unilateral pneumothorax may extend to bilateral pneumothoraces.

In spite of extensive research to find similar cases, no more could be found and we theoretically reported the first case with the previously mentioned mechanism.

Learning points

- Chest x-ray should be done in a neck-penetrating wound because it can cause pneumothorax. Bilateral pneumothorax can happen in unilateral neck-penetrating trauma.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Farsi D, Nouri GH, Mofidi M, Hafezimoghadam P. Unusual bilateral pneumothoraces due to zone I neck stab wound. *BMJ Case Reports* 2012;10.1136/bcr-2012-006538, Published XXX

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