



Deep Sulcus Sign

Md Intisar Kamal Sadat¹, Ahmad Mursel Anam², Lutfun Nahar Nizhu³

¹. Resident Medical Officer, Acute Medicine & HDU, Square Hospitals Ltd.

². Associate Consultant, Acute Medicine & Critical Care, Square Hospitals Ltd.

³. Specialist, Acute Medicine & HDU, Square Hospitals Ltd.

Clinical Image

Received: August 07, 2024
Revised: September 08, 2024
Accepted: November 04, 2024

*Corresponding Author:

Dr. Md Intisar Kamal Sadat
Resident Medical Officer
Square Hospitals Ltd,
18/F Bir Uttam Kazi Nuruzzaman
Sarak, West Panthapath, Dhaka 1205,
Bangladesh.
E-mail: intisarkamal3361@gmail.com

©Acute & Critical Care Physicians'
Foundation Bangladesh

CASE REPORT:

A 60-year-old diabetic male was brought to the Acute Medicine and HDU department with the complaints of sudden onset of shortness of breath and right-sided chest pain after a high-speed road traffic accident. He had no history of headache, vomiting, altered level of consciousness, or convulsion. Clinical examination revealed he was conscious with a respiratory rate of 30 breaths/min. He had transient hypotension and tachycardia, which was improved after the administration of intravenous fluids. On lung auscultation, he had breath sound diminished from the 6th intercostal space to downwards on both sides of the lungs. Chest X-ray (anteroposterior view) with the patient in the supine position showed a deep and radiolucent costophrenic sulcus in right lower zone (Fig-1) and pleural effusion in the left side of the lung without subcutaneous emphysema or rib fracture. An immediate bedside lung ultrasound confirmed a pneumothorax in the right lung (Fig-2). The subsequent computed tomography (CT) chest confirmed a right-sided pneumothorax. A chest tube was inserted, and a repeat chest radiograph demonstrated complete re-expansion of the lung. Following a lengthy hospitalization, the patient was released in stable condition.

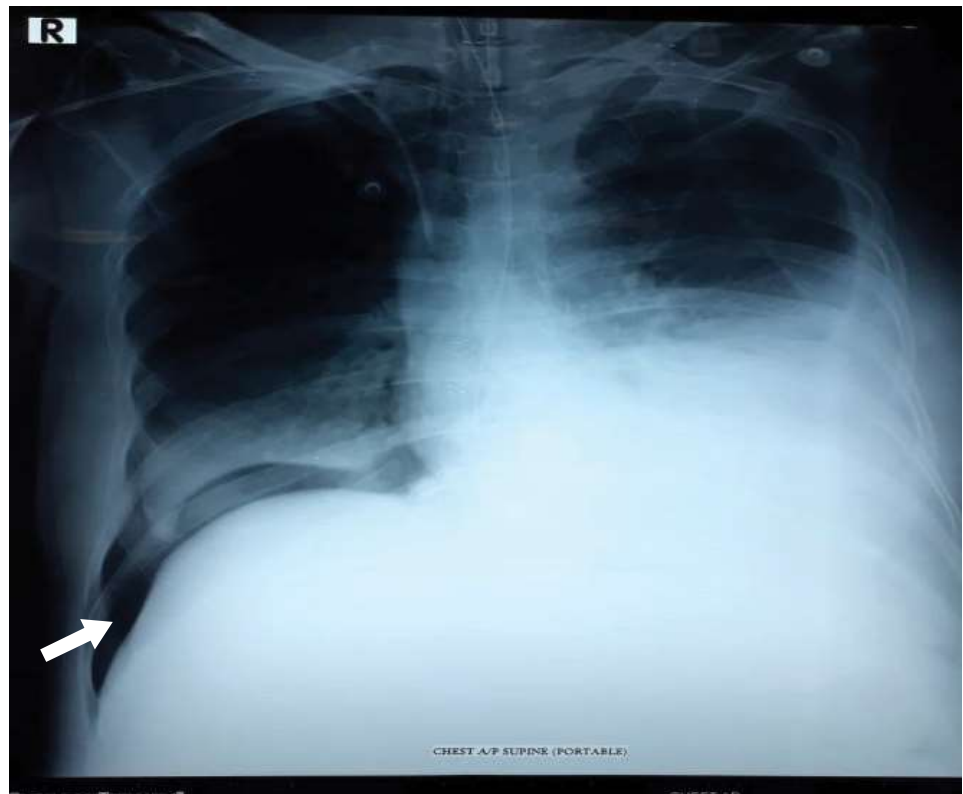


Fig-1: Chest X-ray (anteroposterior view) shows a right pneumothorax with a deep sulcus sign. (white arrow)

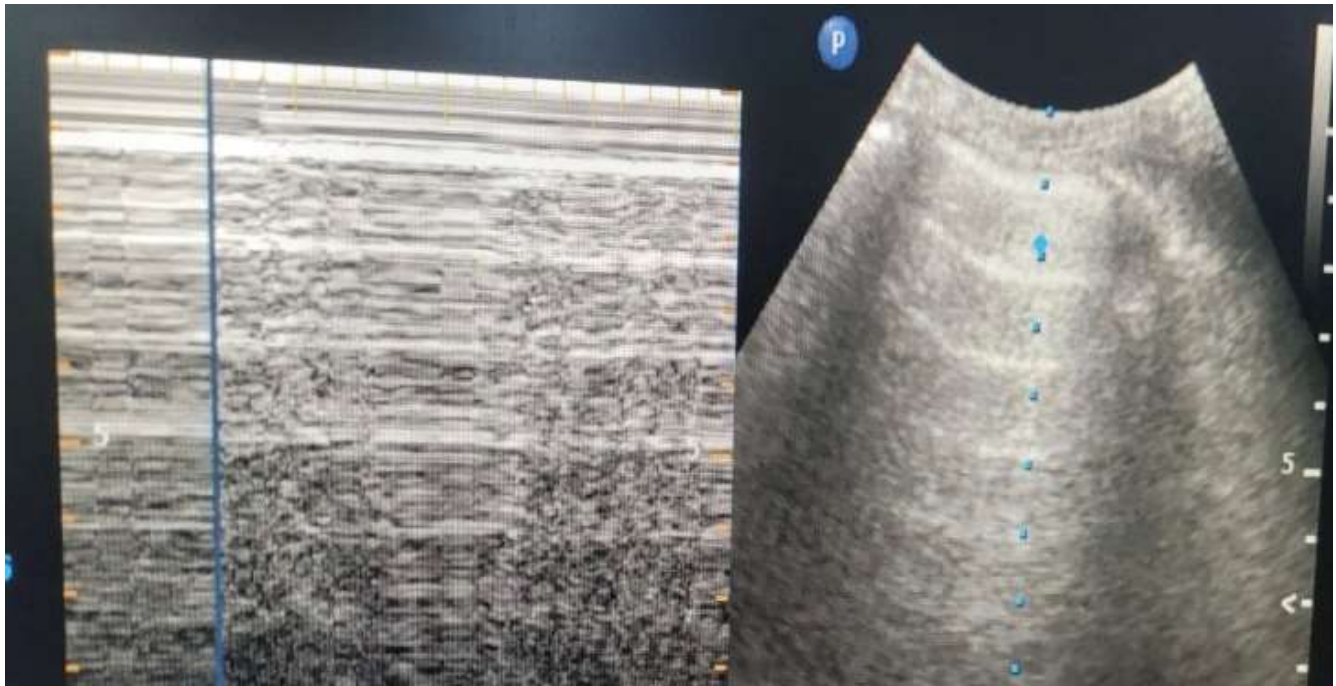


Fig-2: Lung ultrasound finding suggests barcode sign.

DISCUSSION:

In critically ill or polytraumatized patients, pneumothorax is a significant clinical condition. The most feasible initial imaging modality for trauma patients is supine AP chest radiography. Nevertheless, trauma teams may interpret up to 76% of all pneumothoraces as occult at the time of admission.¹ The deep sulcus sign is a useful indicator for diagnosing pneumothorax. Radiologically it is a dark lateral sulcus in which the diaphragm connects the chest wall. In the supine position, the air in the pleural space distributes anteriorly and basally at nondependent portions and causes the deepening of the lateral costophrenic angle, the deep sulcus sign.²⁻⁴ In a retrospective review of 44 severely injured patients who were identified with occult pneumothoraces, the deep sulcus sign is the most frequently overlooked radiologic sign. Lung ultrasonography can be promptly applied at the bedside for early detection of pneumothorax in trauma patients.¹

Conflict of interest: None declared

REFERENCES:

1. Liu SY, Tsai IT, & Yang PJ. Pneumothorax and deep sulcus sign. *QJM* 2016;109(9): 621-622.
2. Sabbar S, Nilles EJ. Images in clinical medicine. Deep sulcus sign. *The New England journal of medicine*. 2012; 366(6):552.
3. Wang SH, Wei KY, Liu YC, Huang CH. The deep sulcus sign indicates free air in the abdomen. *Internal and emergency medicine*. 2015;10(8):1033-4.
4. Kim HH, Park CY, Cho HM. Deep Sulcus Sign. *Trauma Image and Procedure*. 2016; 1(1): 12-13.