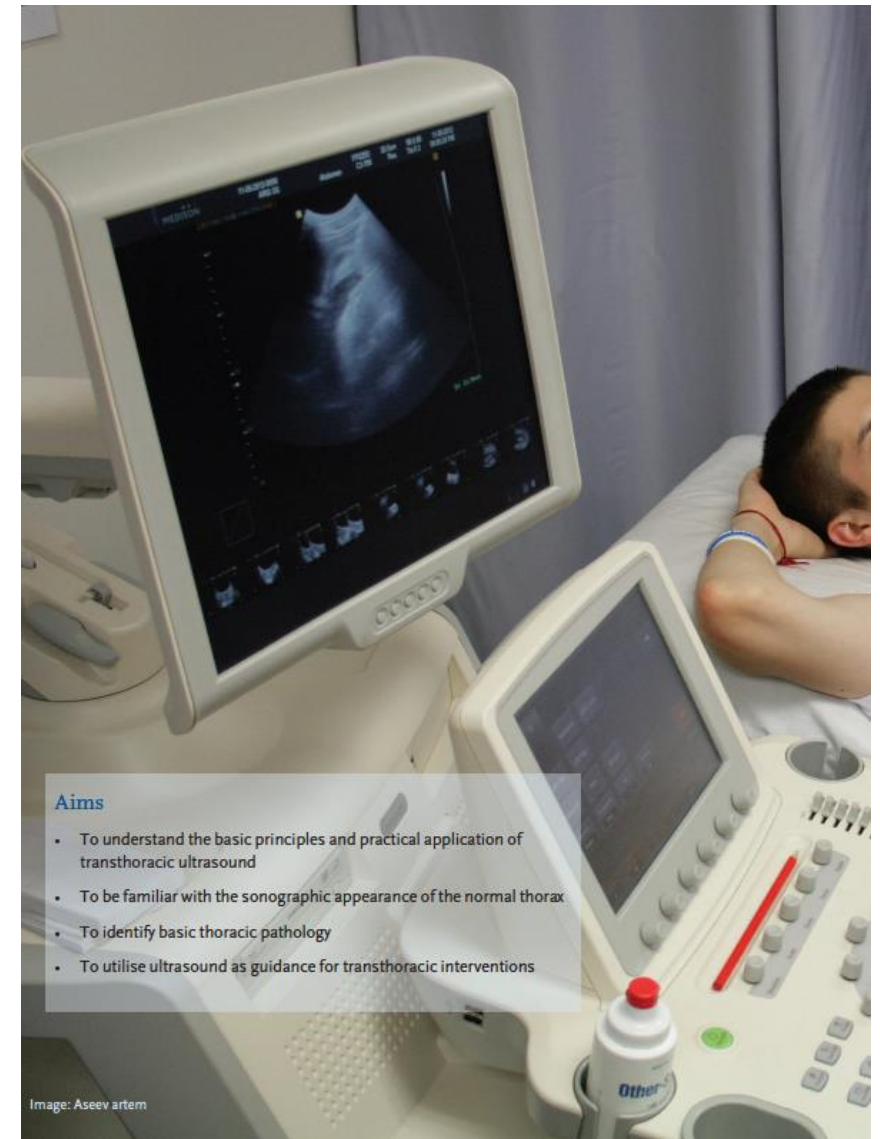


ΔΙΑΘΩΡΑΚΙΚΗ ΥΠΕΡΗΧΟΓΡΑΦΙΑ

Πνευμονικό παρέγχυμα

Διάφραγμα



Aims

- To understand the basic principles and practical application of transthoracic ultrasound
- To be familiar with the sonographic appearance of the normal thorax
- To identify basic thoracic pathology
- To utilise ultrasound as guidance for transthoracic interventions

Image: Aseev artem

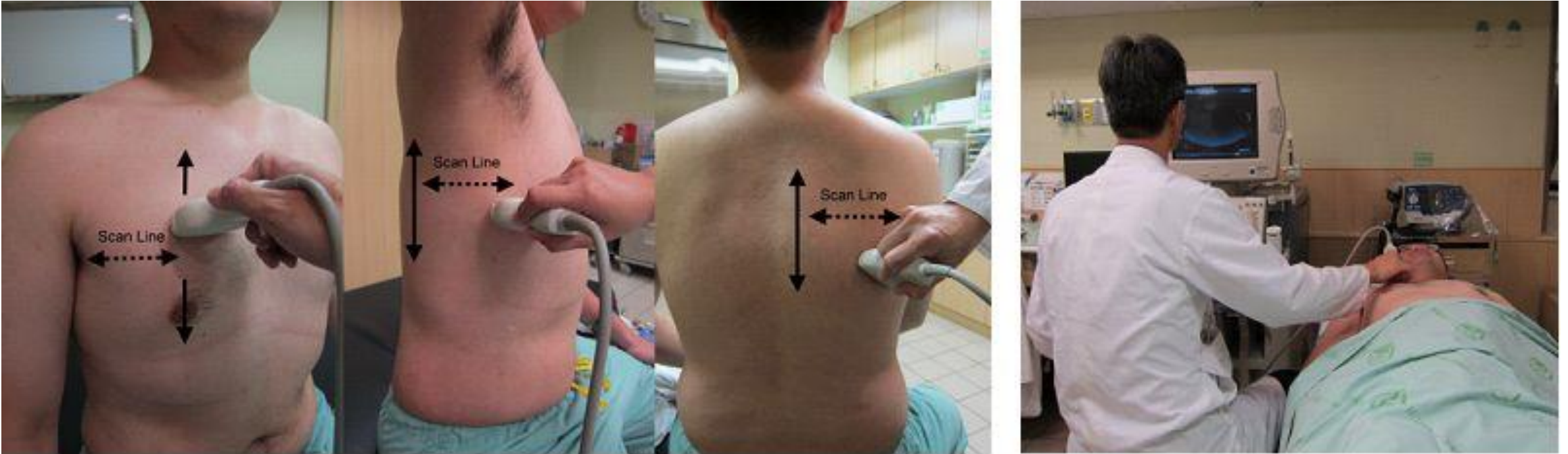
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2012 | Volume 9 | No
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Aims

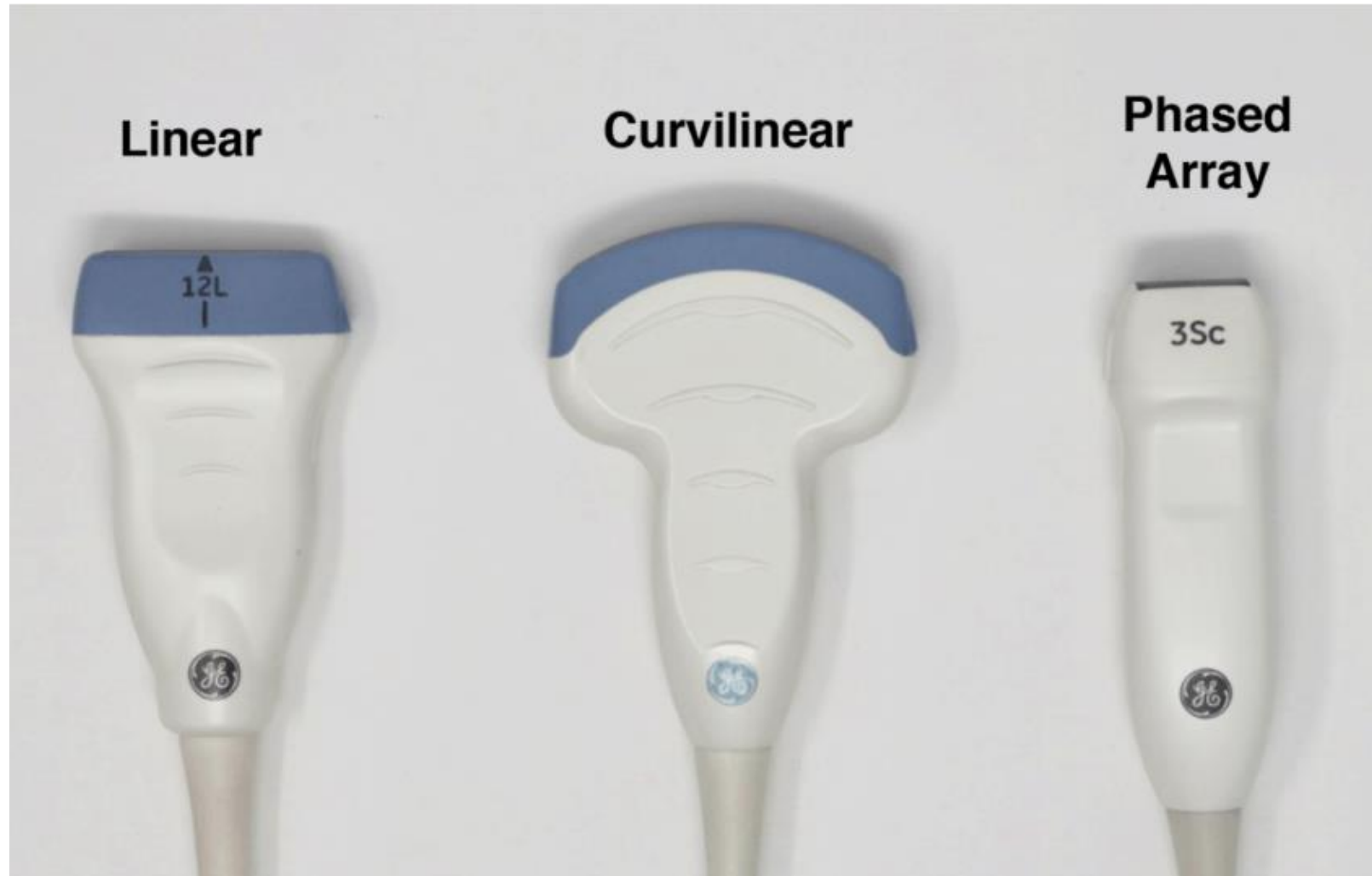
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Πνευμονικό παρέγχυμα – Καθιστή & Ύπτια θέση





- Low-frequency probe (2–5 MHz) with a curvilinear shape is suitable for screening of superficial and deeper structures
- High-frequency probe (5–10 MHz) with a linear shape is used for refined assessment.



Πνευμονικό παρέγχυμα – Υπτια θέση



Πνευμονικό παρέγχυμα

Ύπτια θέση

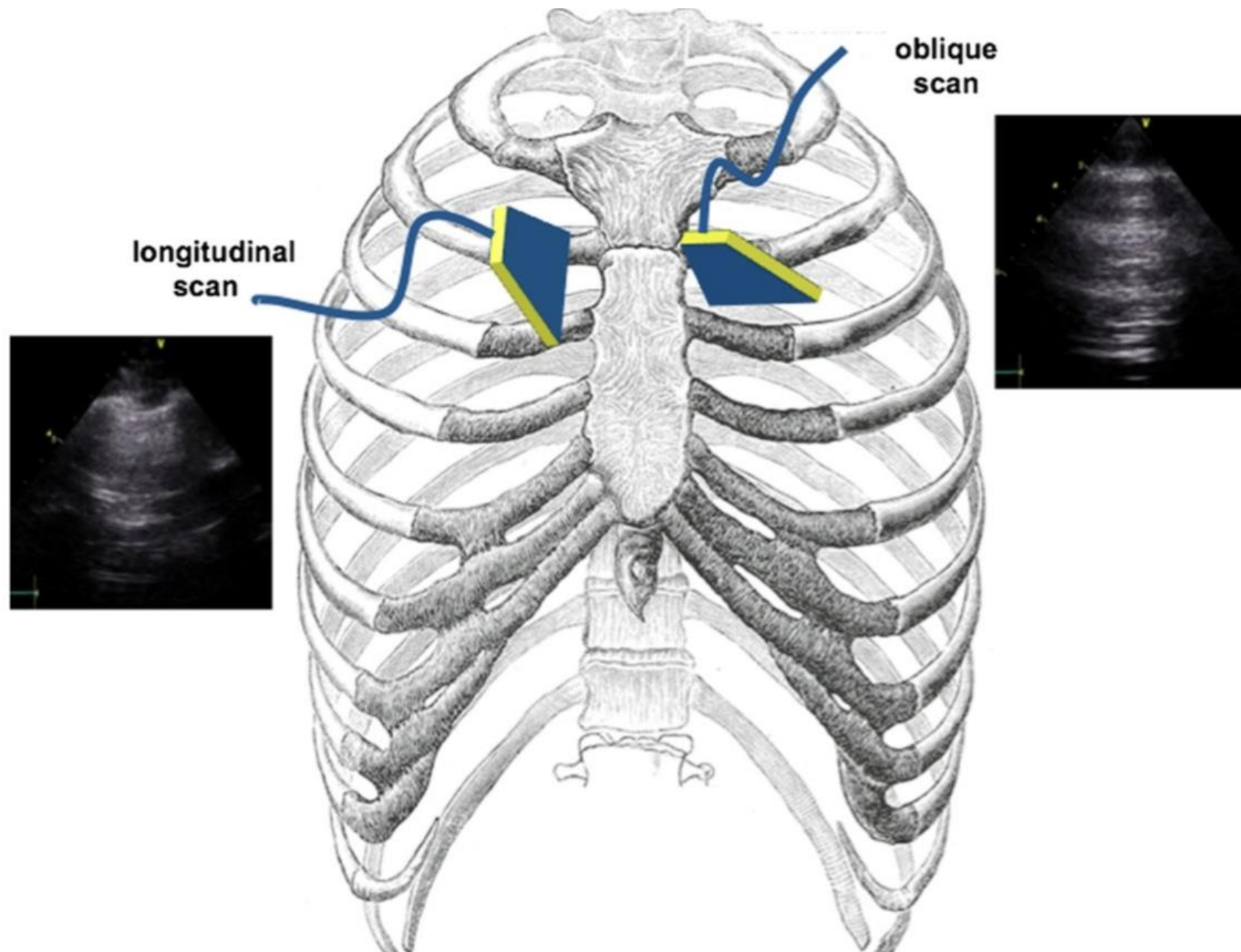


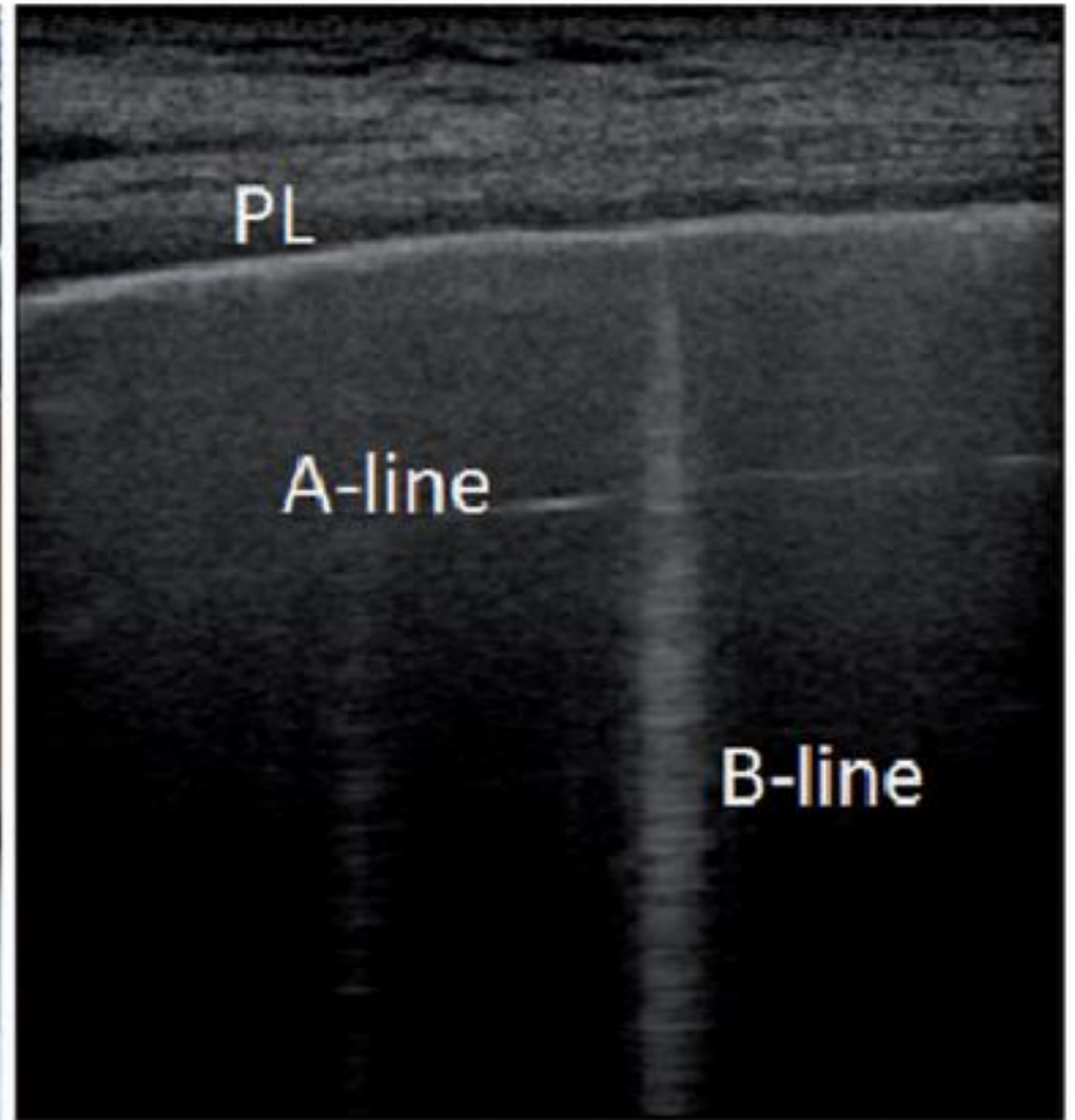
Figure 6 Eight-zone scanning scheme of the antero-lateral chest (according to Volpicelli G et al. See ref. [15]).

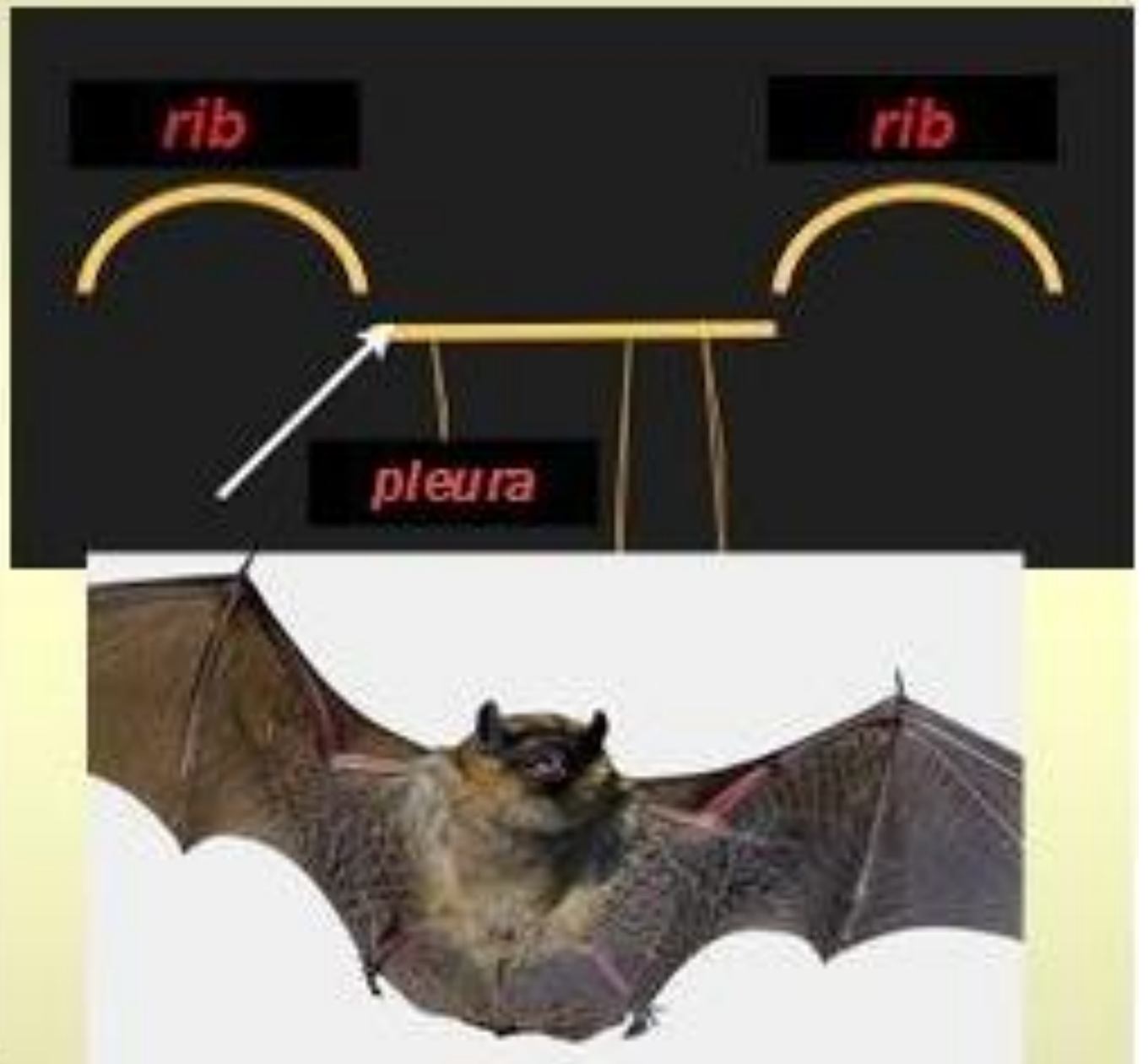
Πνευμονικό παρέγχυμα Όρθια θέση



Figure 10 Position of the patient to scan the posterior chest.







Bat sign

1:00:49
)

V

1

2

3

4

5

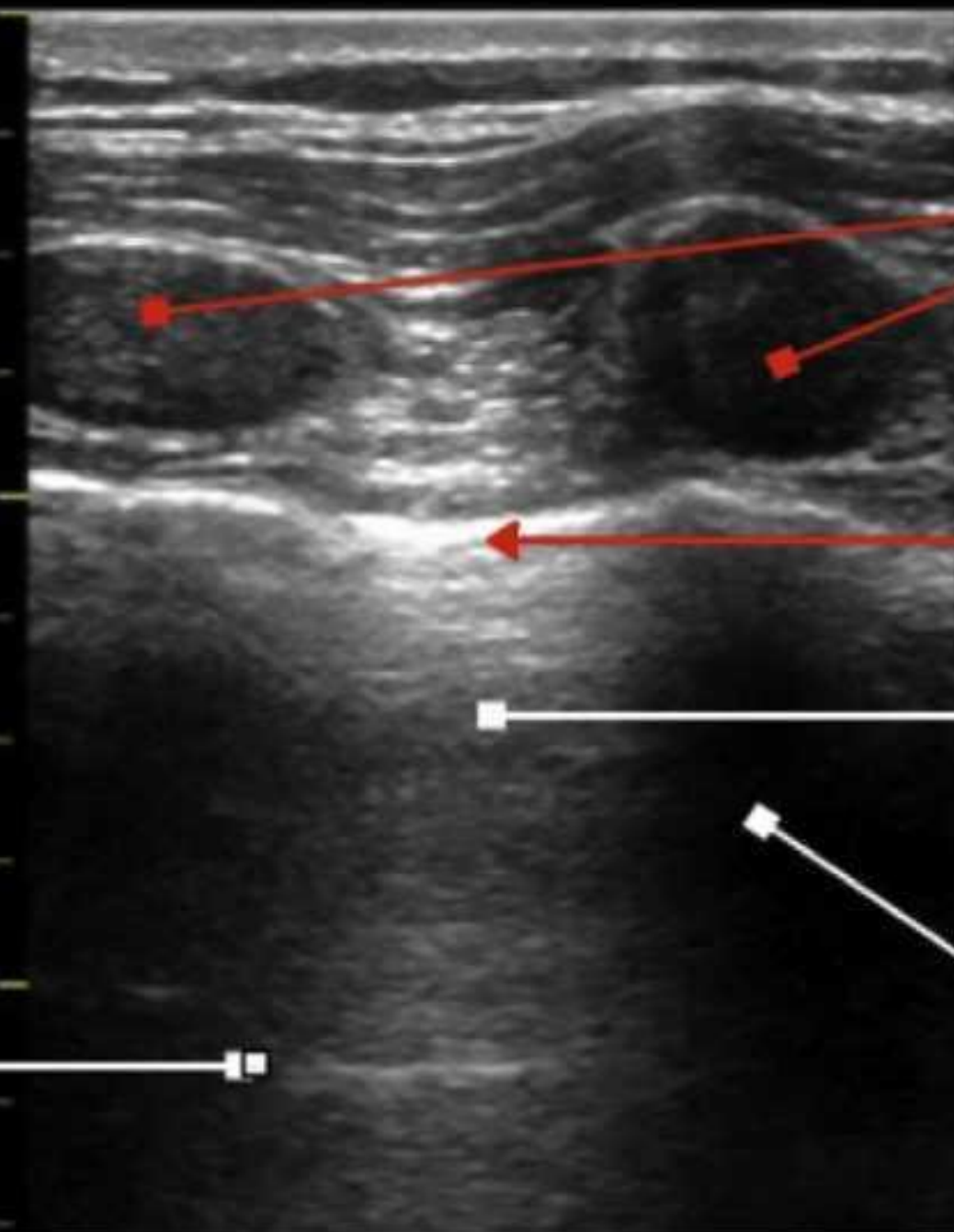
A line

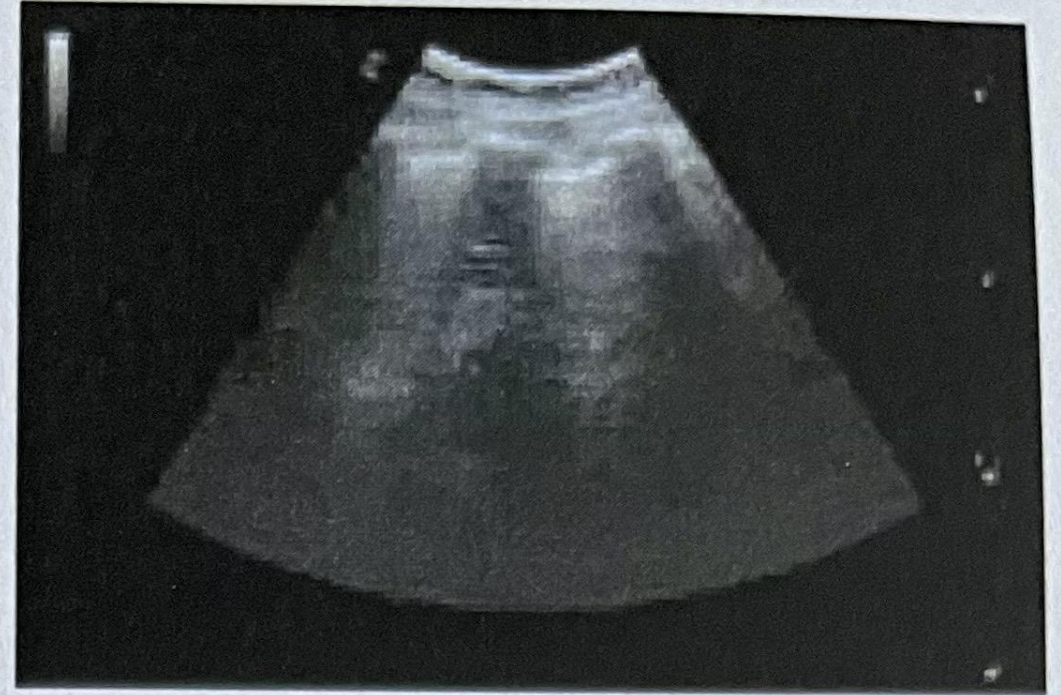
Ribs

Pleural line

Lung
parenchyma

Acoustic
shade





NORMAL Lung – A-line

The A-lines are horizontal artifactual repetitions of the pleural line displayed at regular intervals

LUS 10 signs

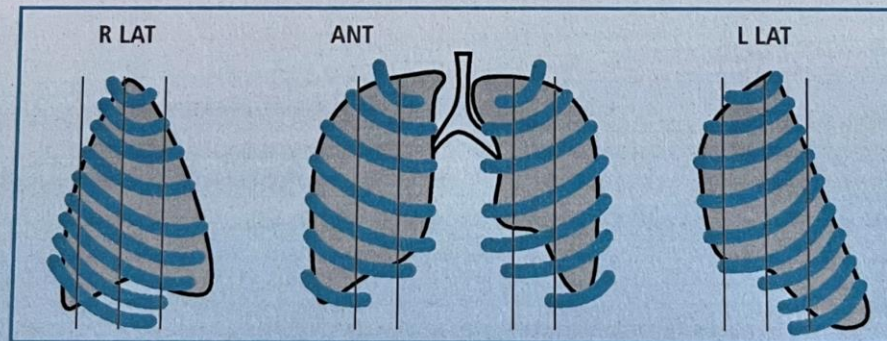
1. Bat sign (pleural line)	NORMAL
2. Lung sliding	
3. A-line (horizontal artifact)	
4. Quad sign	EFFUSION
5. Sinusoid sign	
6. Fractal and tissue-like sign	CONSOLIDATION
7. B-line (vertical artifact)	INTERSTITIAL
8. Lung rockets	
9. Abolished lung sliding with stratosphere sign	PNEUMOTORAX
10. Lung point	

Two more signs, the lung pulse and dynamic air bronchogram, are used to distinguish atelectasis from pneumonia

CT vs LUS

Lung CT	Lung ultrasound
Thickened pleura	Thickened pleural line
Ground glass shadow and effusion	B-lines (multifocal, discrete, or confluent)
Pulmonary infiltrating shadow	Confluent B-lines
Subpleural consolidation	Small (centomeric) consolidations
Translobar consolidation	Both non-translobar and translobar consolidation
Pleural effusion is rare	Pleural effusion is rare
More than two lobes affected	Multilobar distribution of abnormalities
Negative or atypical in lung CT images in the super-early stage, then diffuse scattered or ground glass shadow with the progress of the disease, further lung consolidation	Focal B-lines are the main feature in the early stage and in mild infection; alveolar interstitial syndrome is the main feature in the progressive stage and in critical patients; A-lines can be found in the convalescence; pleural line thickening with uneven B-lines can be seen in patients with pulmonary fibrosis

The ultrasound bedside can read dynamically and constantly the air-fluid ratio which the CT scan cannot perform. Lung ultrasound is more sensitive than chest X-ray for the diagnosis of pneumothorax and shows similar high specificity

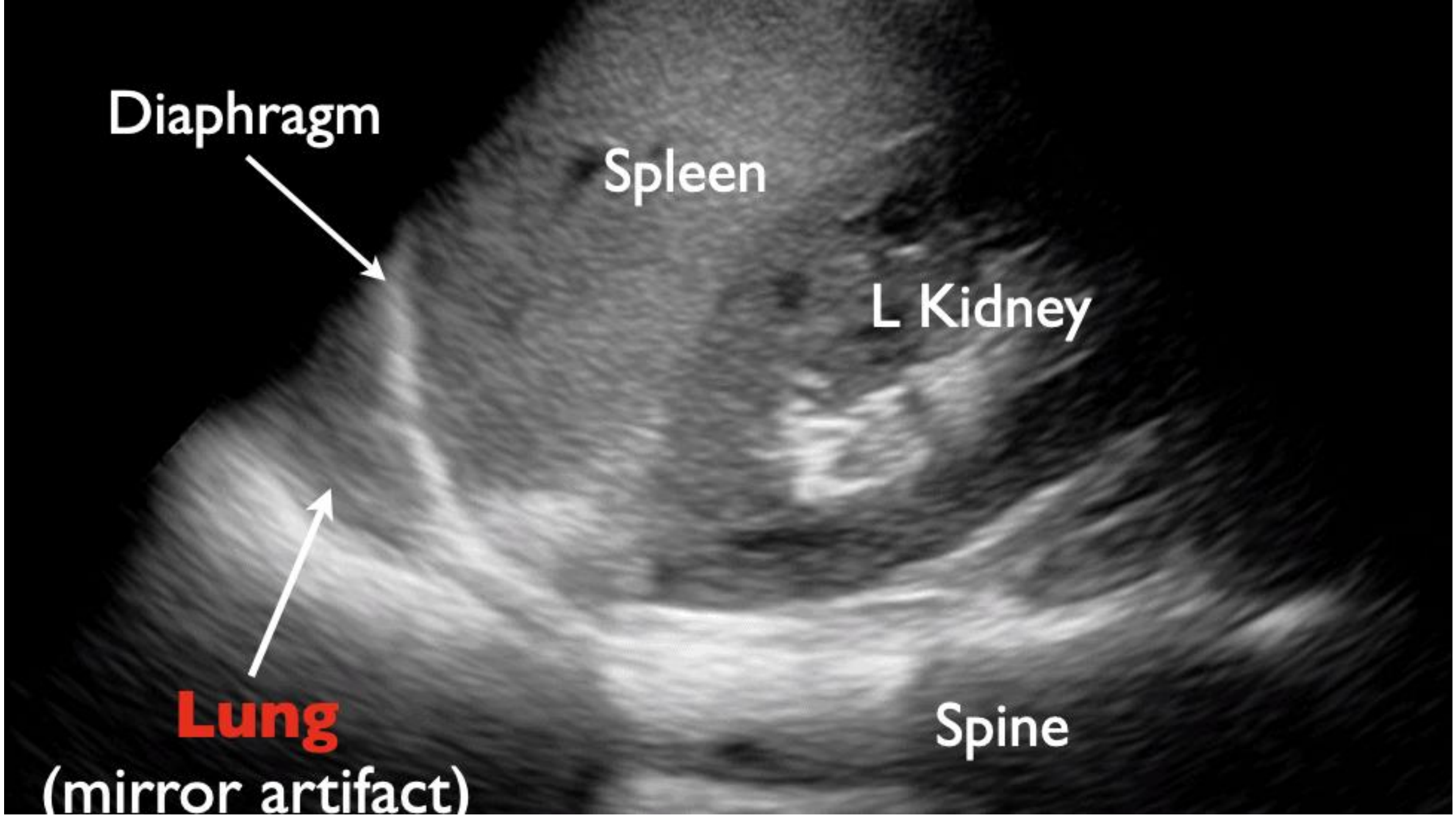


LUS provide significant information to improve the management of the critical patient under mechanical ventilation, from the initial assessment, through the ventilation setting and its complication diagnosis, until the weaning process.

Normal Right Upper Quadrant / Pleural Exam



Mirror Artifact Reproduces Liver Above Diaphragm



Diaphragm

Spleen

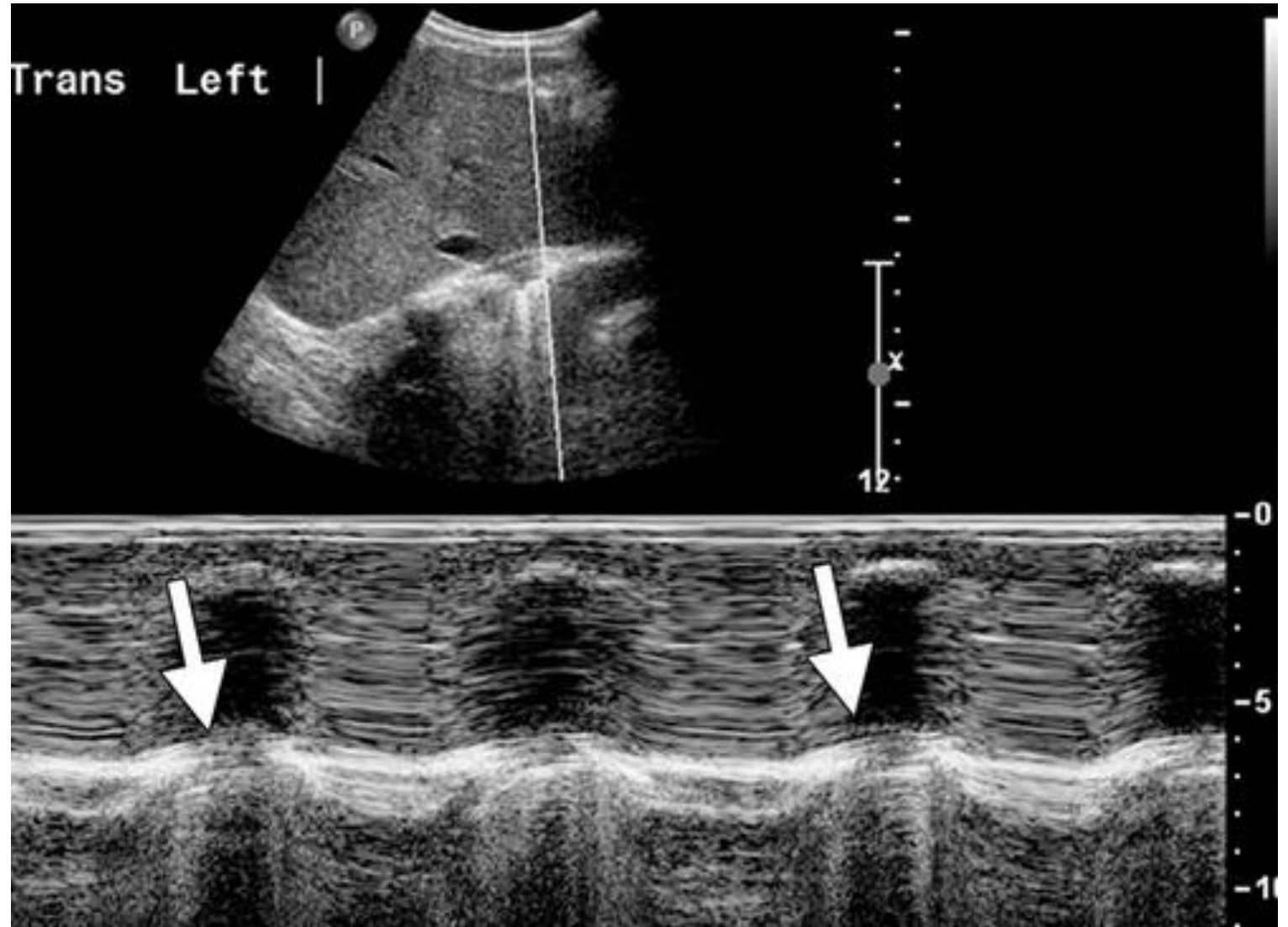
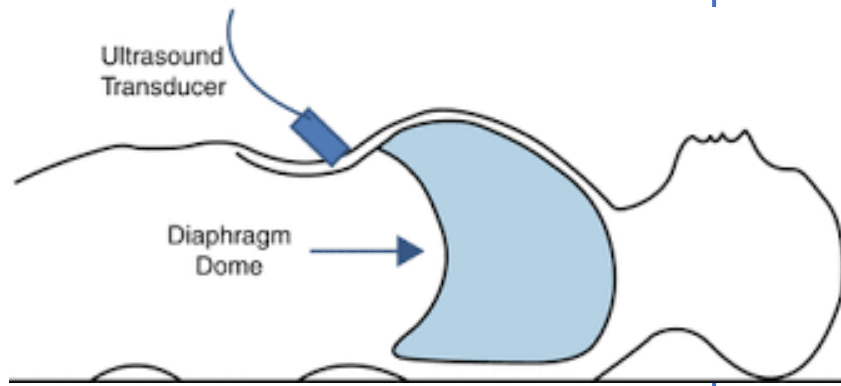
L Kidney

Spine

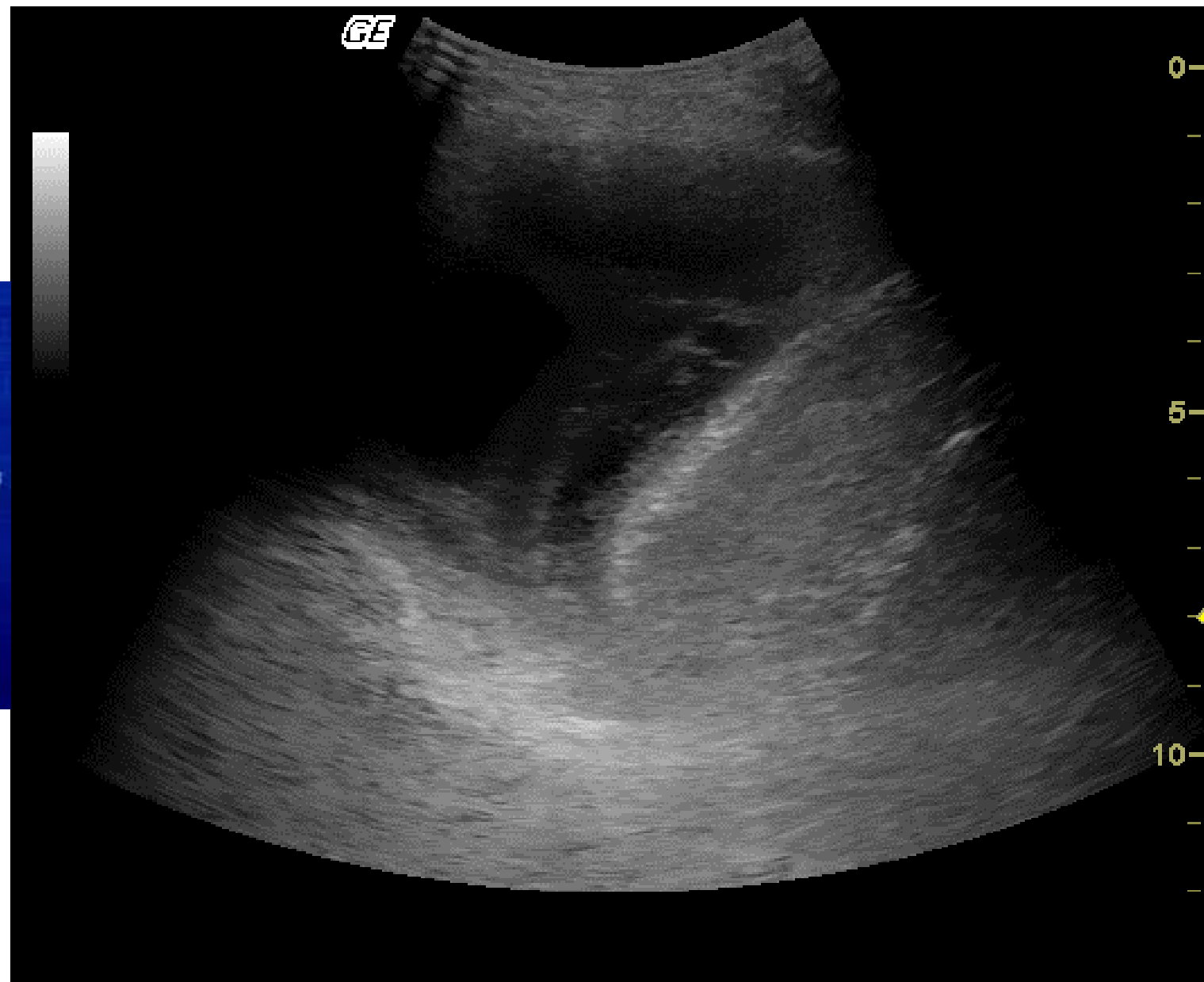
Lung

(mirror artifact)

Diaphragm Ultrasound in the Intensive Care Unit



επιπέδωση ημιδιαφράγματος



ΠΑΡΑΔΟΞΗ ΚΙΝΗΤΙΚΟΤΗΣ ΗΜΙΔΙΑΦΡΑΓΜΑΤΟΣ



ΜΑΖΑ ΗΜΙΔΙΑΦΡΑΓΜΑΤΟΣ

