European Society of
Regional Anaesthesia
& Pain Therapy

ESRA ITALIA

ESRA Italian Chapter

XXVIII CONGRESSO NAZIONALE

PRESIDENTE
DEL CONGRESSO
Luciano Calderone

MZ EVENTS

PALERMO 5-7 Ottobre
XXVIII CONGRESSO NAZIONALE

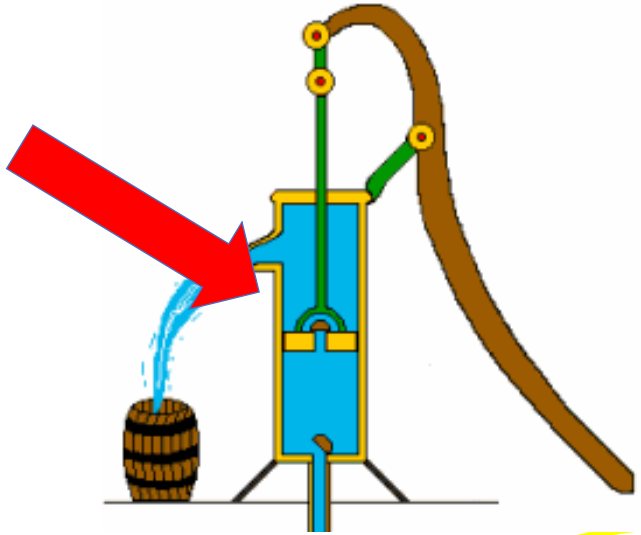
European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

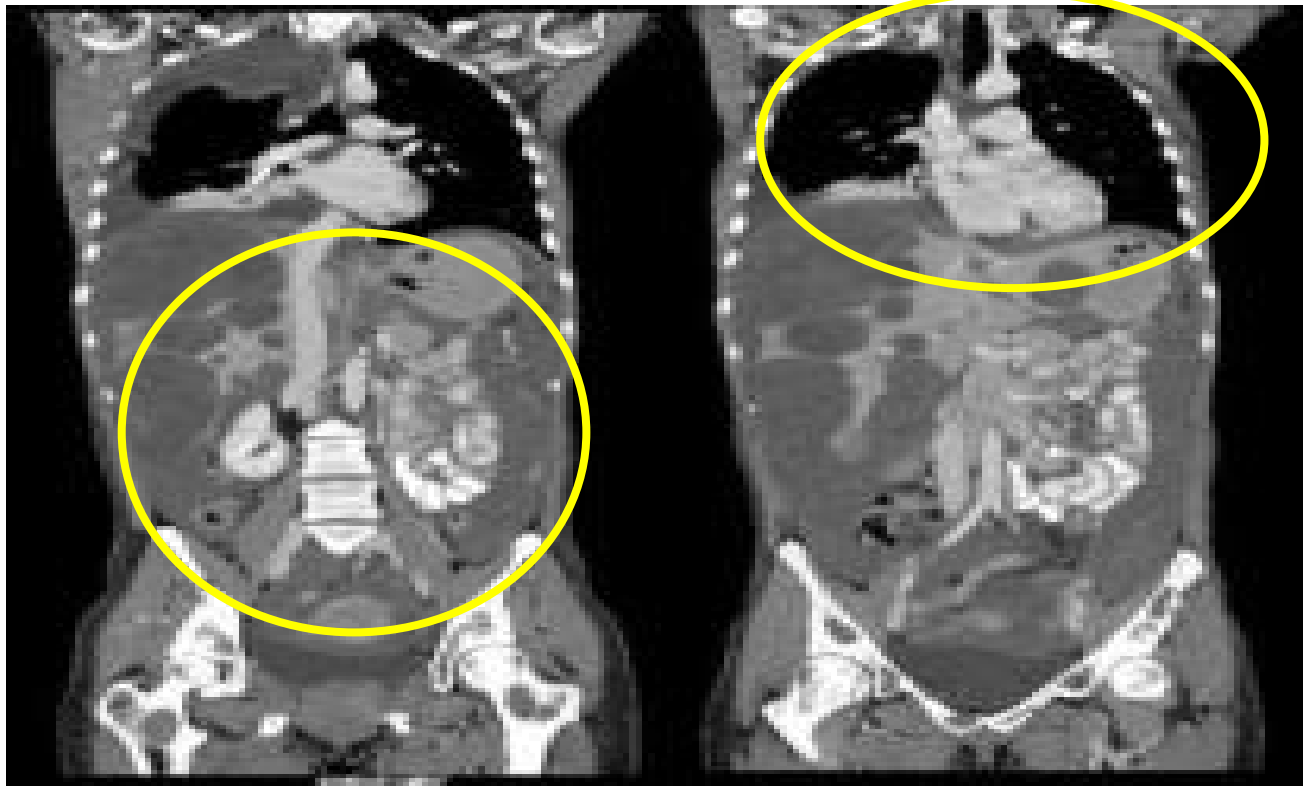
Ultrasound in thoraco-abdominal trauma

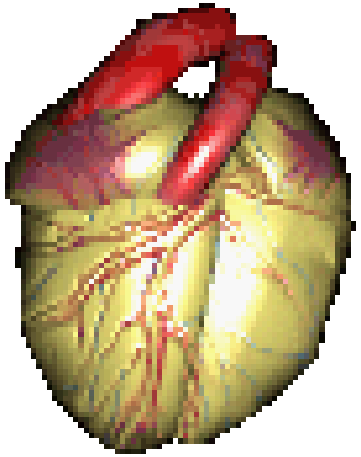
A.Anile

Rianimazione
Azienda Policlinico “S.Marco”
Catania

tonianile@gmail.com







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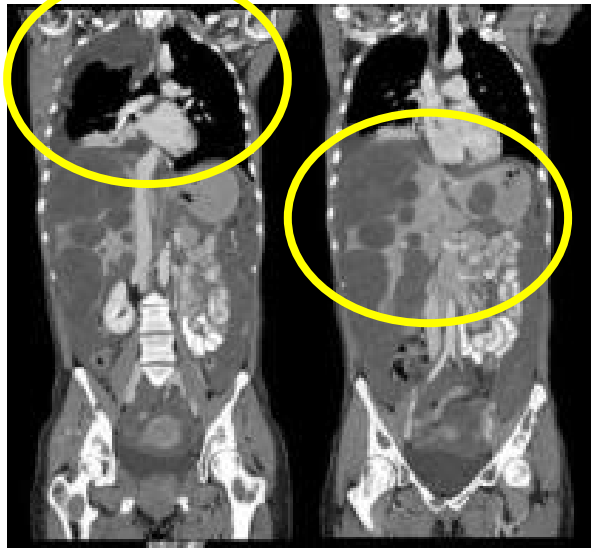

ACR!!!

- NORMAL OR HYPERKINETIC HEART

- NORMAL EKG!!

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ADVANCED LIFE SUPPORT

EUROPEAN RESUSCITATION COUNCIL
GUIDELINES 2021

TREAT REVERSIBLE CAUSES

- Hypoxia
- Hypovolaemia
- Hypo-/hyperkalaemia/metabolic
- Hypothermia/hyperthermia
- Thrombosis – coronary or pulmonary
- Tension pneumothorax
- Tamponade – cardiac
- Toxins

Shockable
(VF/PULSELESS VT)

1 shock

Immediately resume chest compressions for 2 minutes

Return of spontaneous circulation (ROSC)

Non-shockable
(PEA/ASYSTOLE)

Immediately resume chest compressions for 2 minutes

Give high-quality chest compressions and

- Give oxygen
- Use waveform capnography
- Continuous compressions if advanced airway
- Minimise interruptions to compressions
- Intravenous or intraosseous access

Give adrenaline every 3-5 min

Give amiodarone after 3 shocks

Identify and treat reversible causes

Identify and treat reversible causes

- Hypoxia
- Hypovolaemia
- Hypo-/hyperkalaemia/metabolic
- Hypo-/hyperthermia
- Thrombosis – coronary or pulmonary
- Tension pneumothorax
- Tamponade- cardiac
- Toxins

Consider ultrasound imaging to identify reversible causes

Co

- C
  intervention
- Mechanical chest compressions to facilitate transfer/treatment
- acorporeal CPR

After ROSC

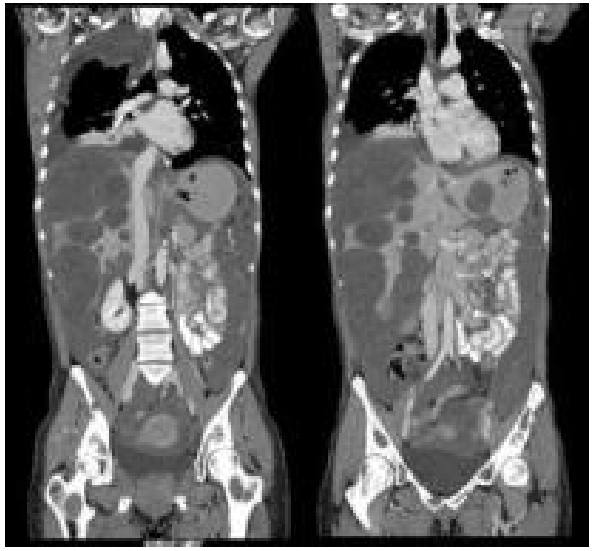
- Use an ABCDE approach
- Aim for SpO_2 of 94-98% and normal $PaCO_2$
- 12 Lead ECG
- Identify and treat cause
- Targeted temperature management

CONSIDER

- Ultrasound imaging

Soar J. RESUSCITATION 2021

Thoraco-abdominal trauma



F ocused

A ssessment with

S onography for

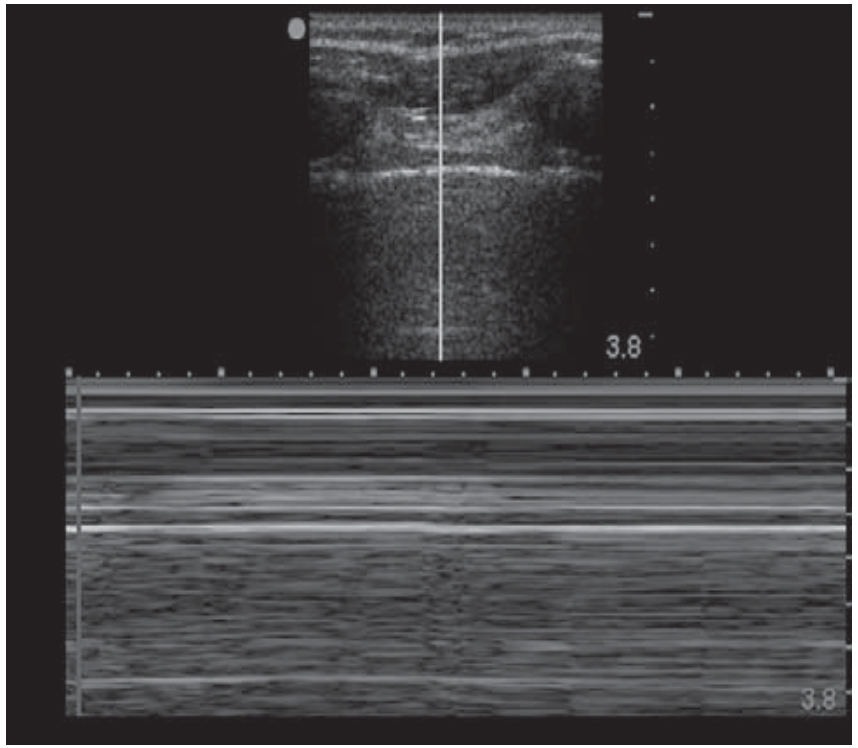
T rauma

“FREE FLUID”

peritoneum
pericardium
pleura

tonianile@gmail.com

"PNX"



E xtended

F ocused

A ssessment with

S onography for

T rauma

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Basics of Lung Ultrasound

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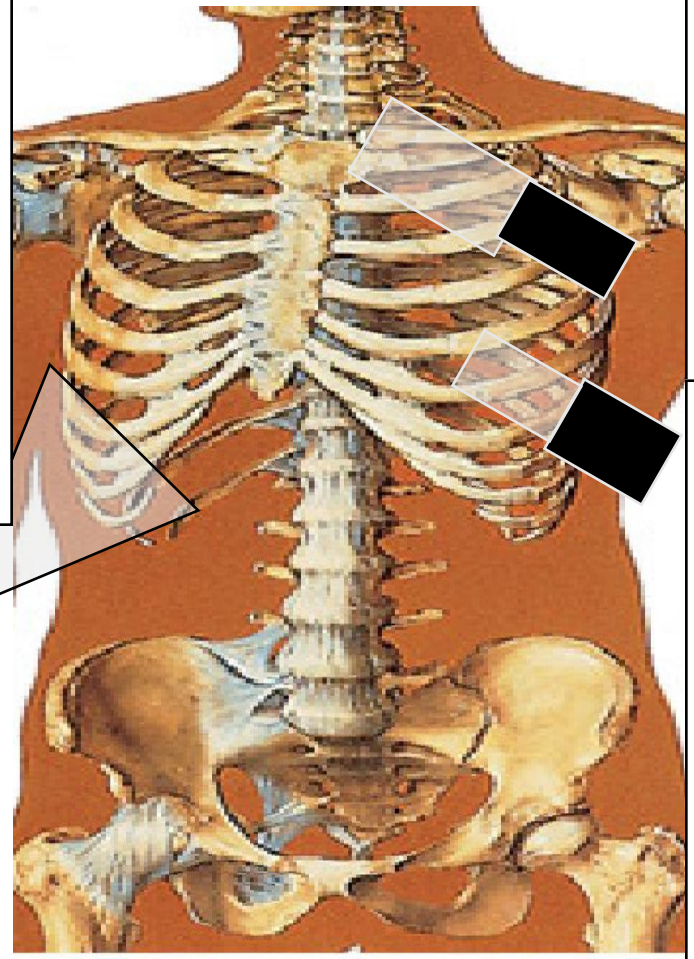
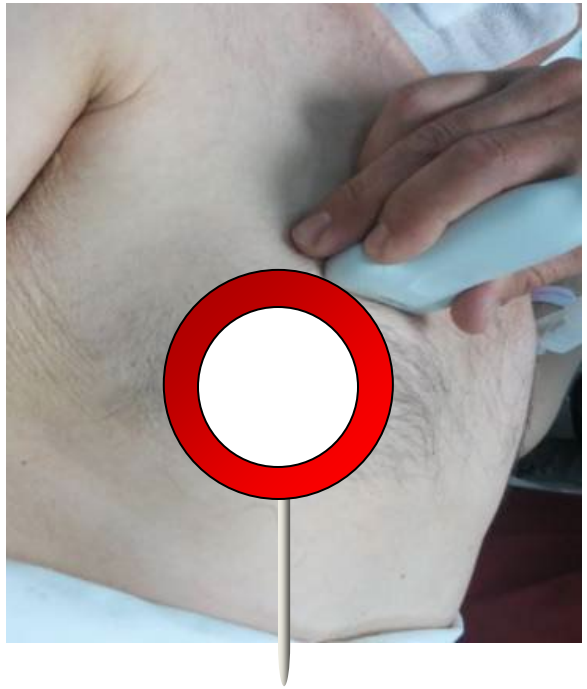
GOALS



RATIONAL



SEMEIOTICS

Real anatomic images → no air

Artifactual images → air

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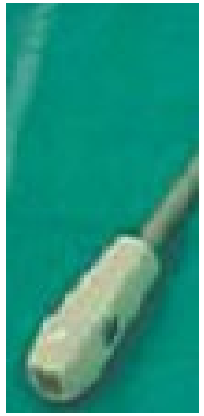
convex (3,5 – 5 MHz)

Linear (7-10 MHz)



sector (3,5 – 5 MHz)

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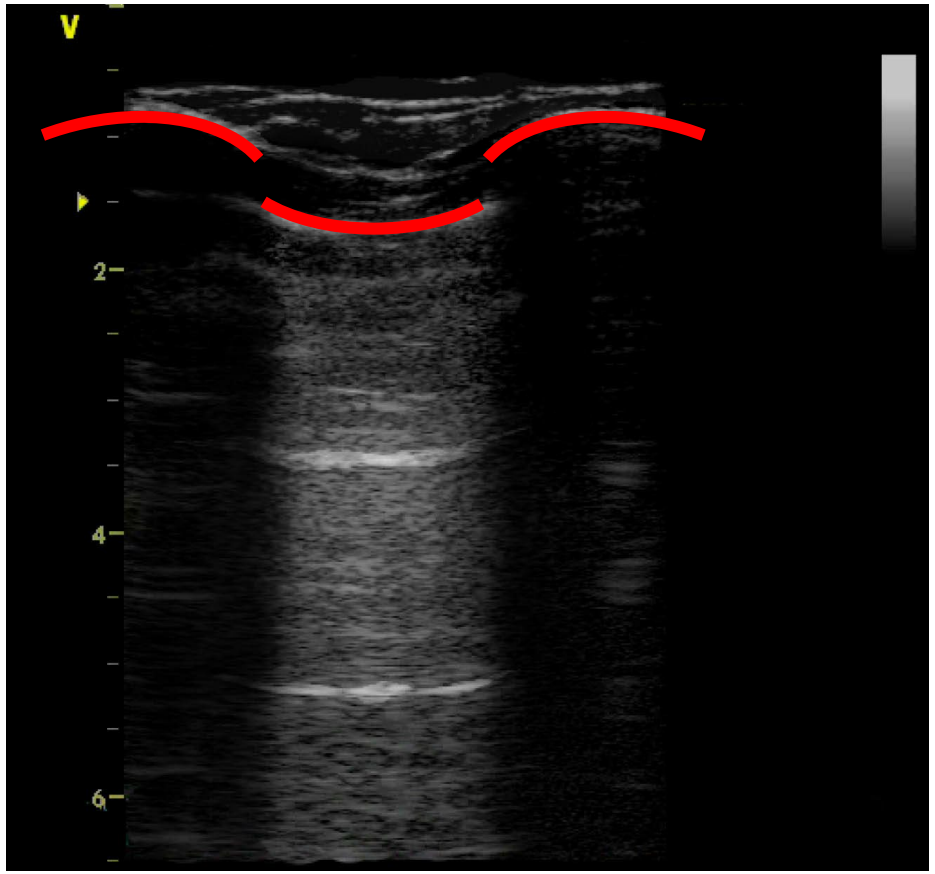

The “BAT SIGN”

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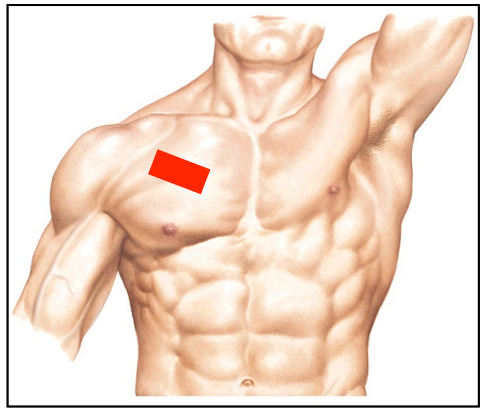
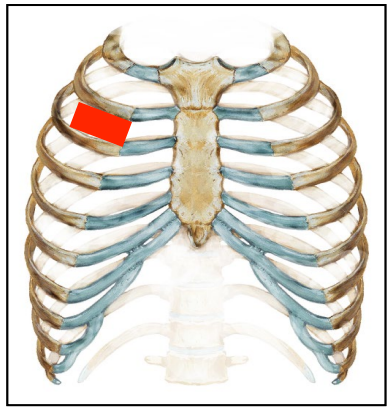
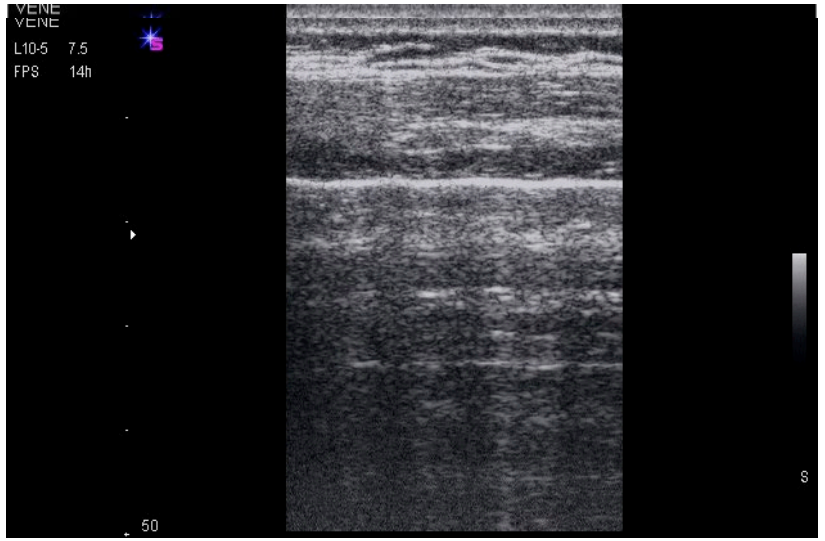
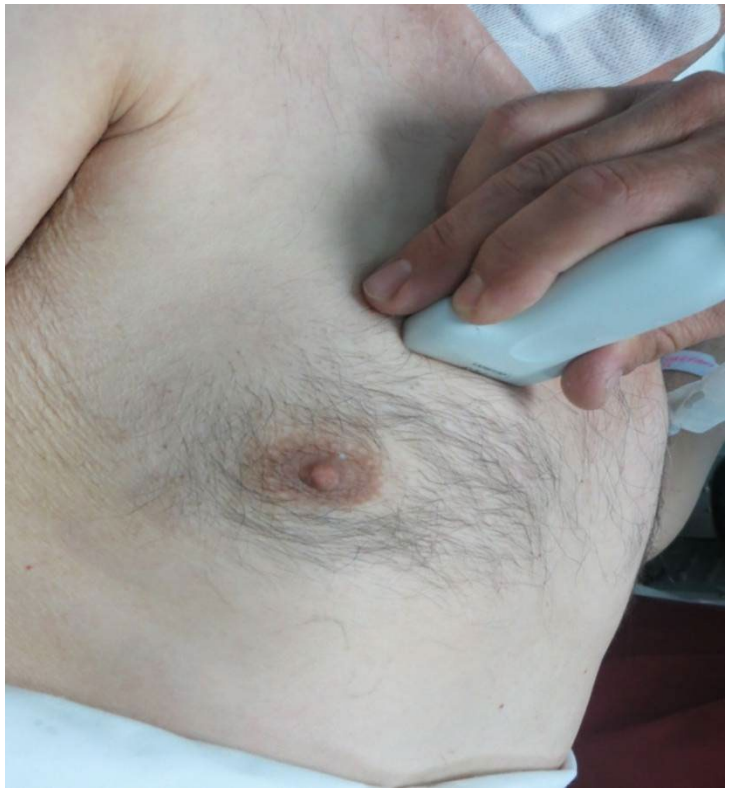





VEINE
VEINE
L10-5 7.5
FPS 14h
50
S



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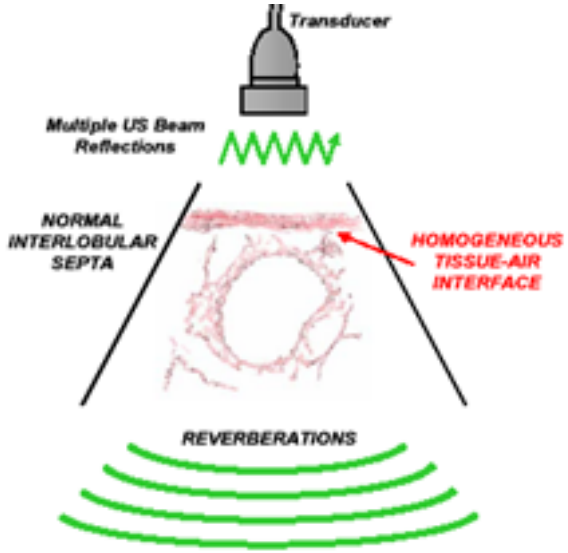
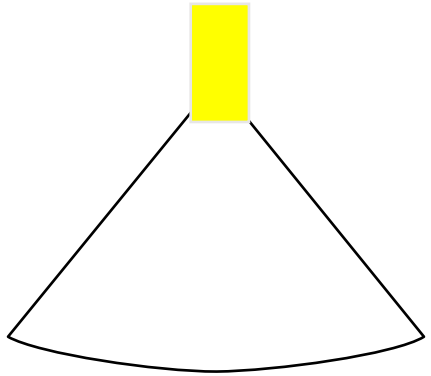
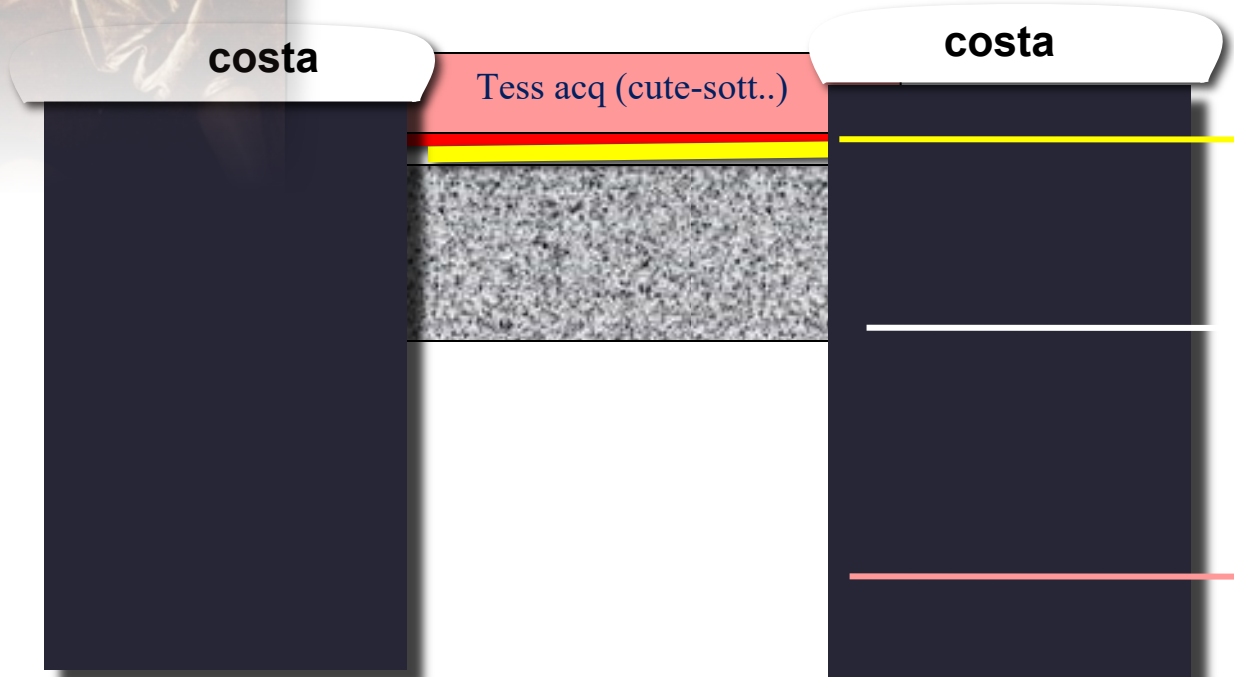
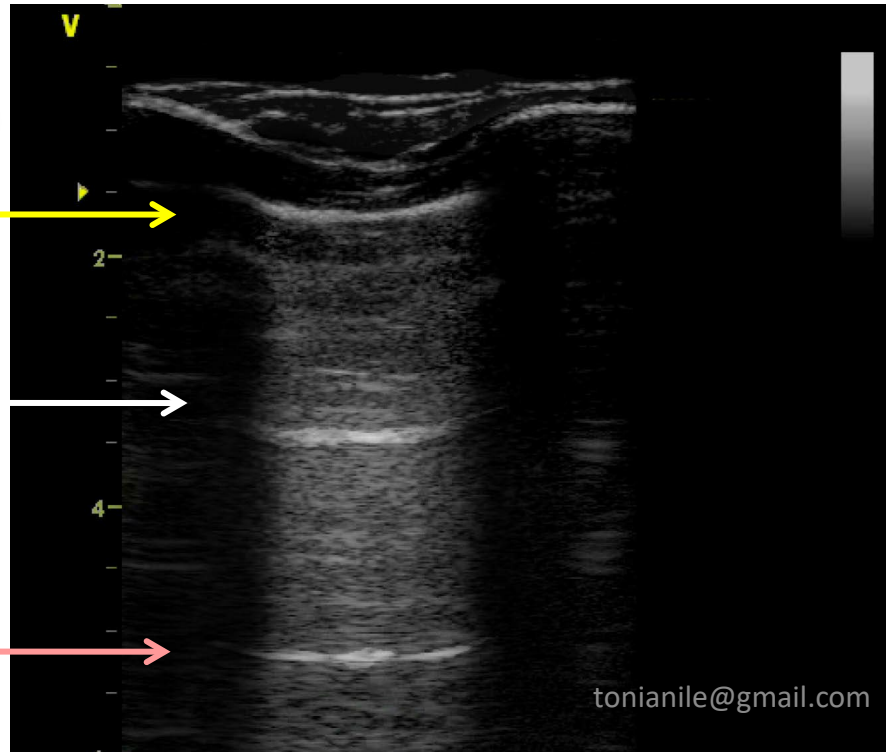
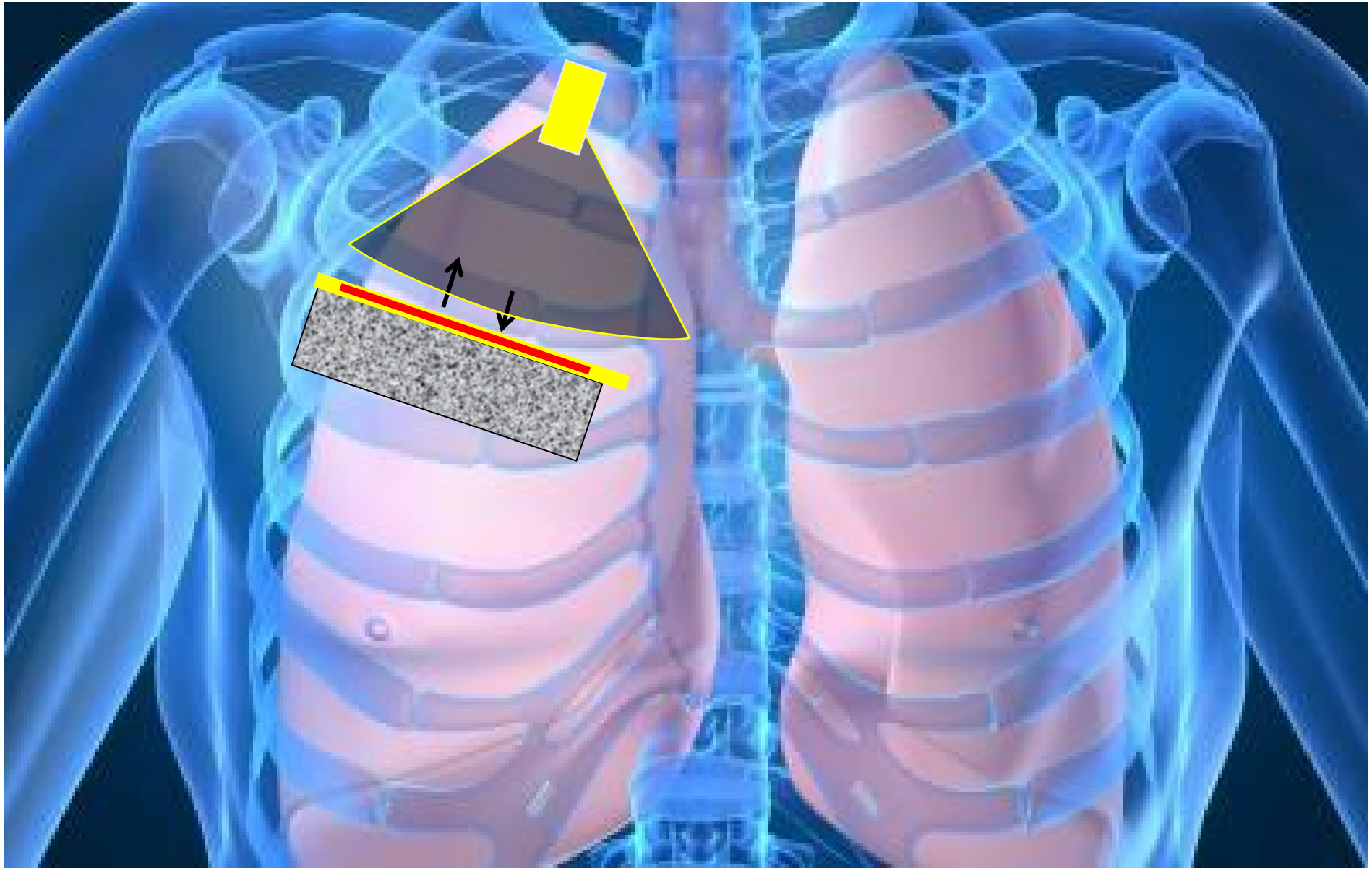
Caravaggio
"Narciso", 1599











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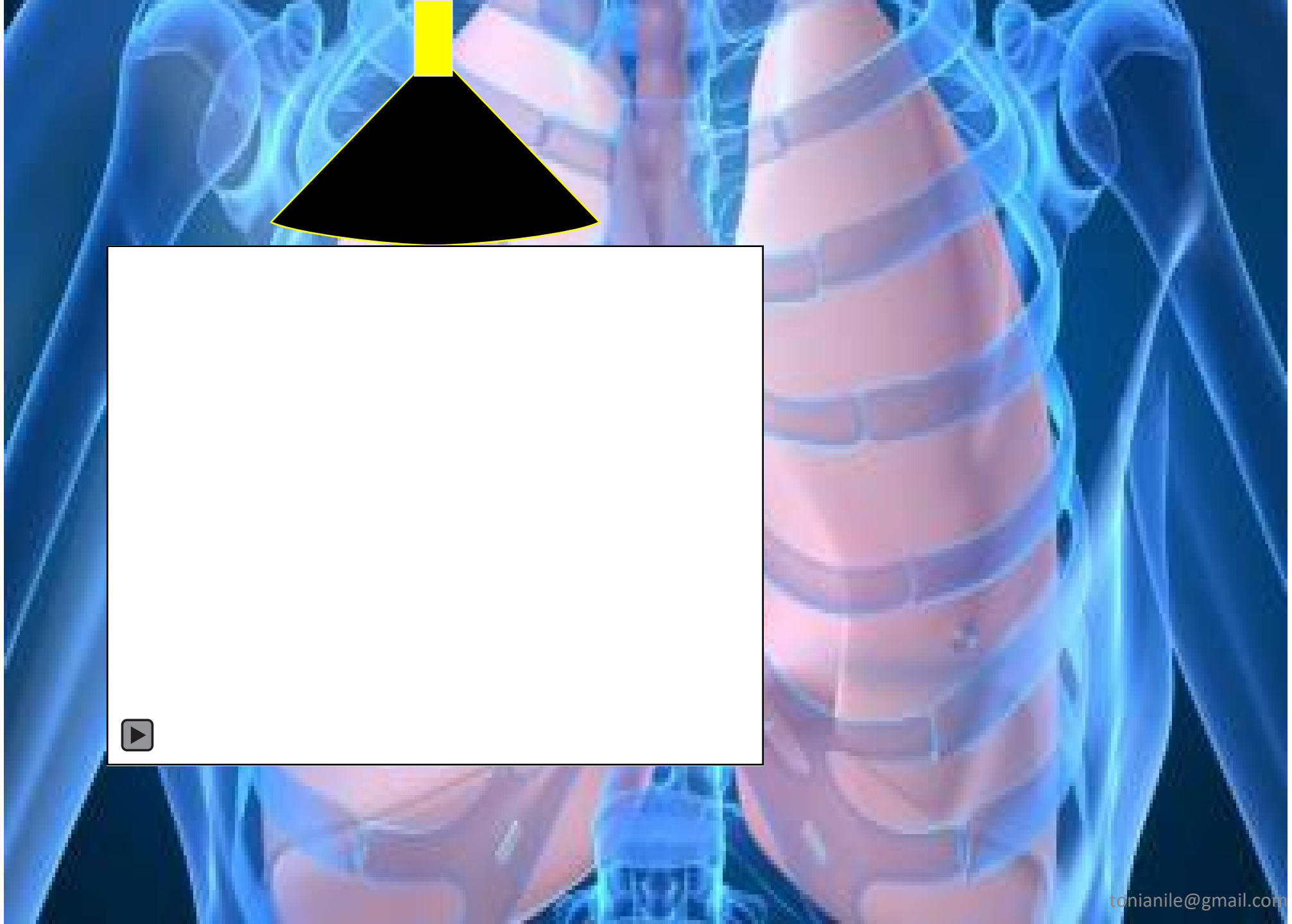
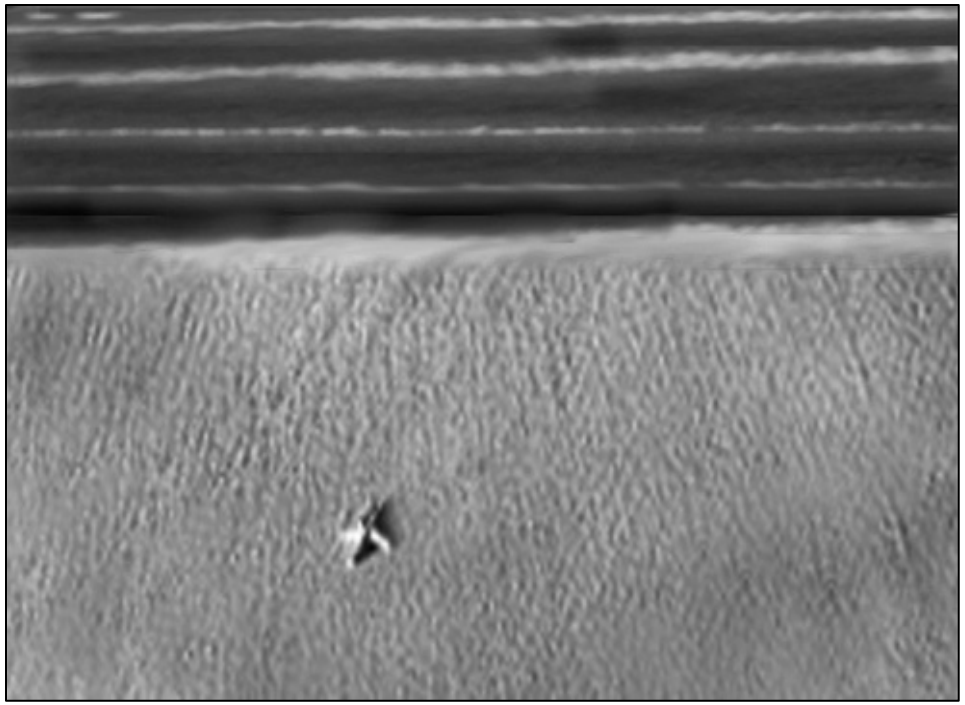


tonianile@gmail.com

M-MODE



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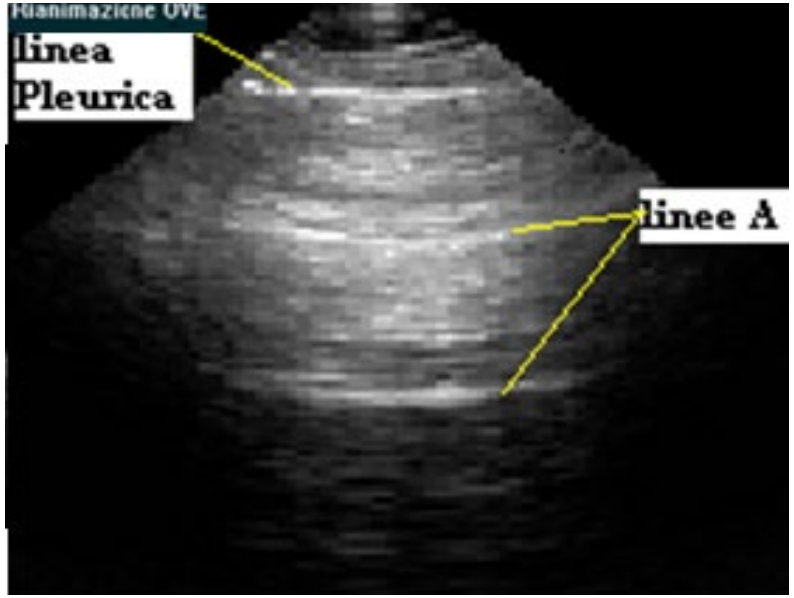
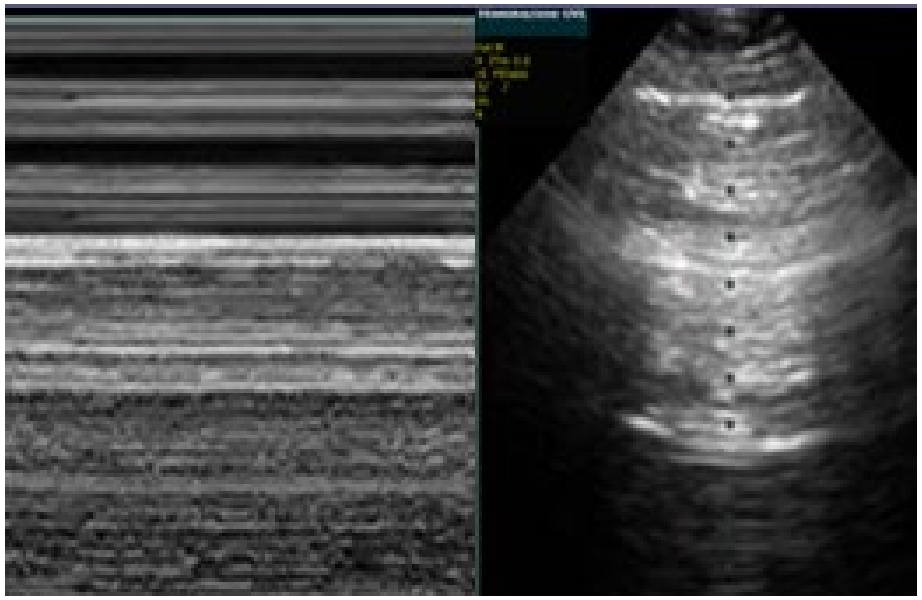
Normal





Pleuric line

Sliding

A line

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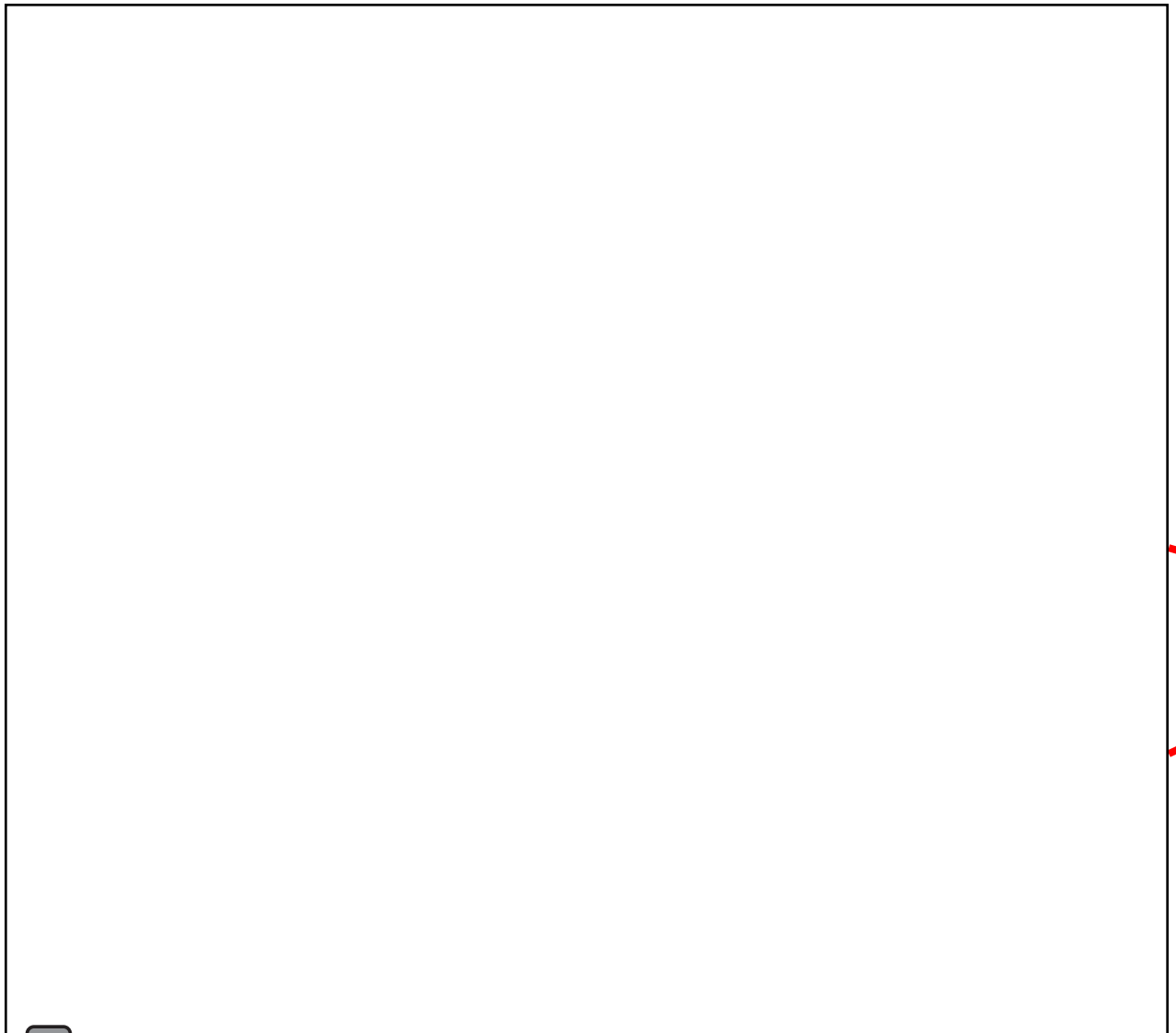
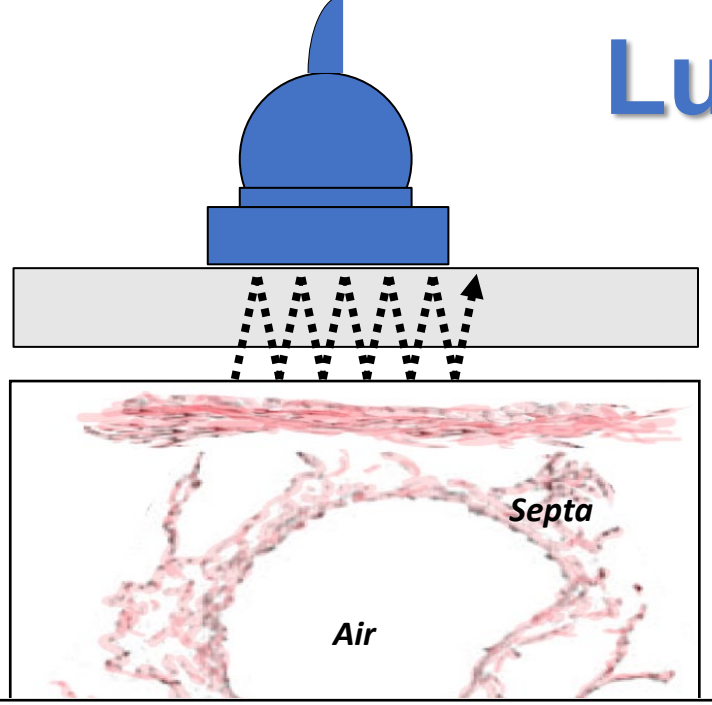


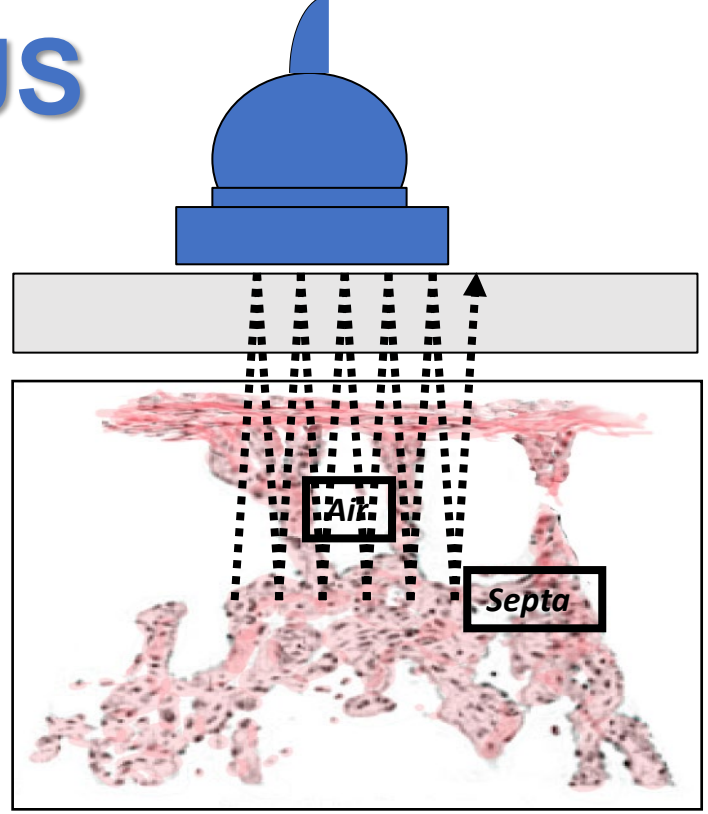
SLIDING

A LINE

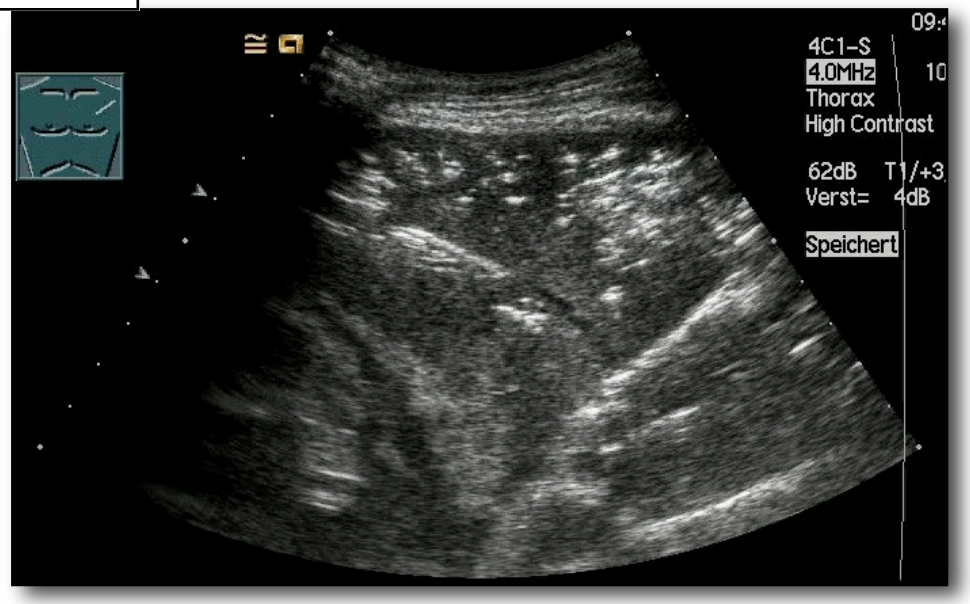
tonianile@gmail.com

Lung US





B-lines



A-lines

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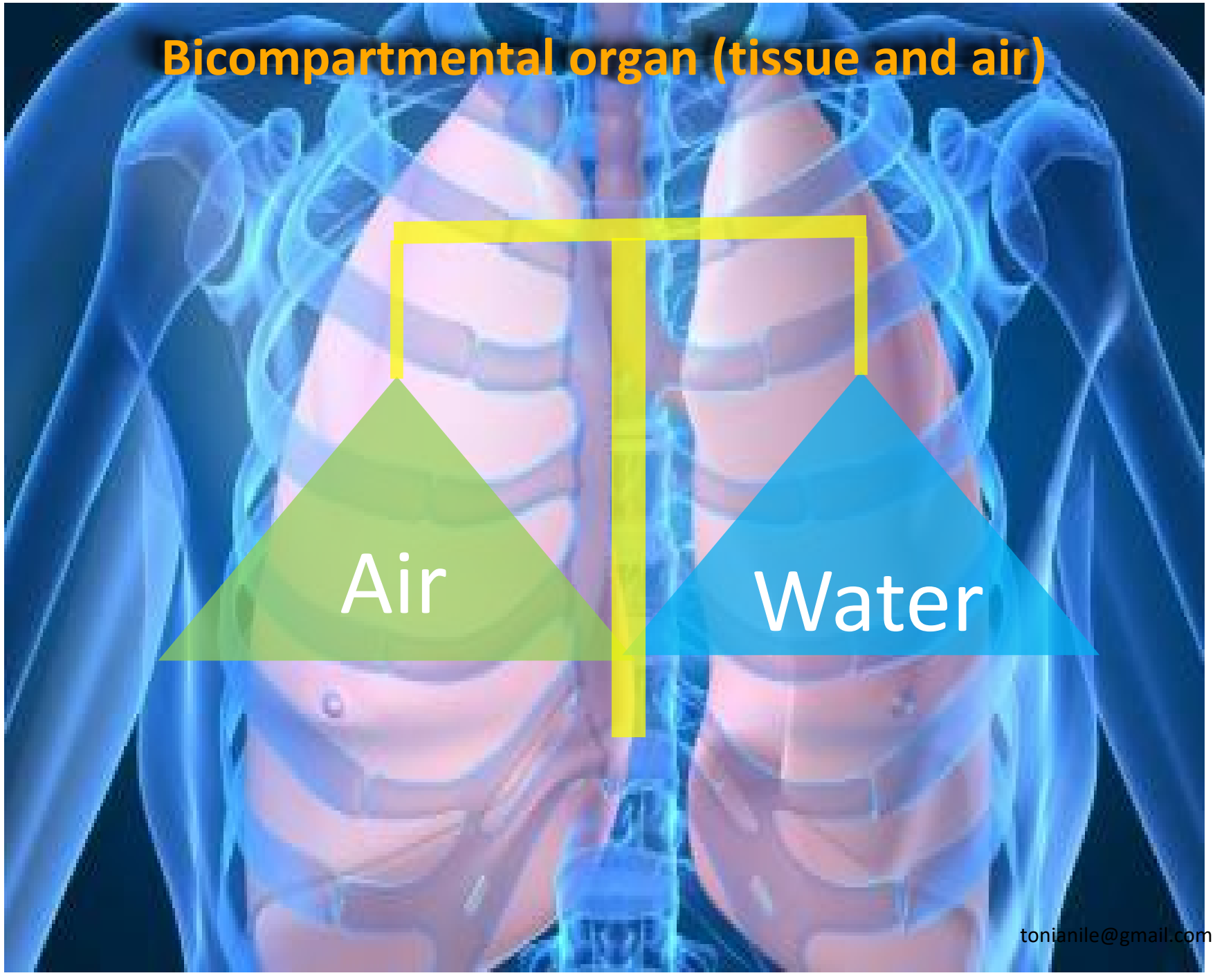

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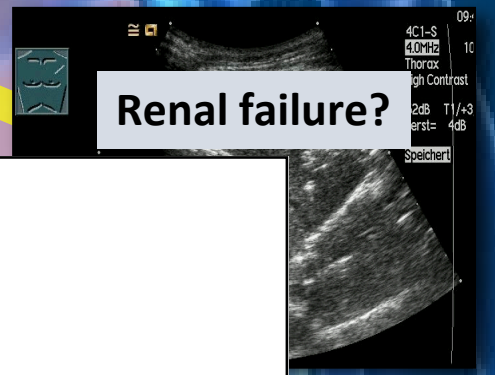
Bicompartmental organ (tissue and air)

Increase of fluids

Lung deflation



PE?

TRAUMA?

Water

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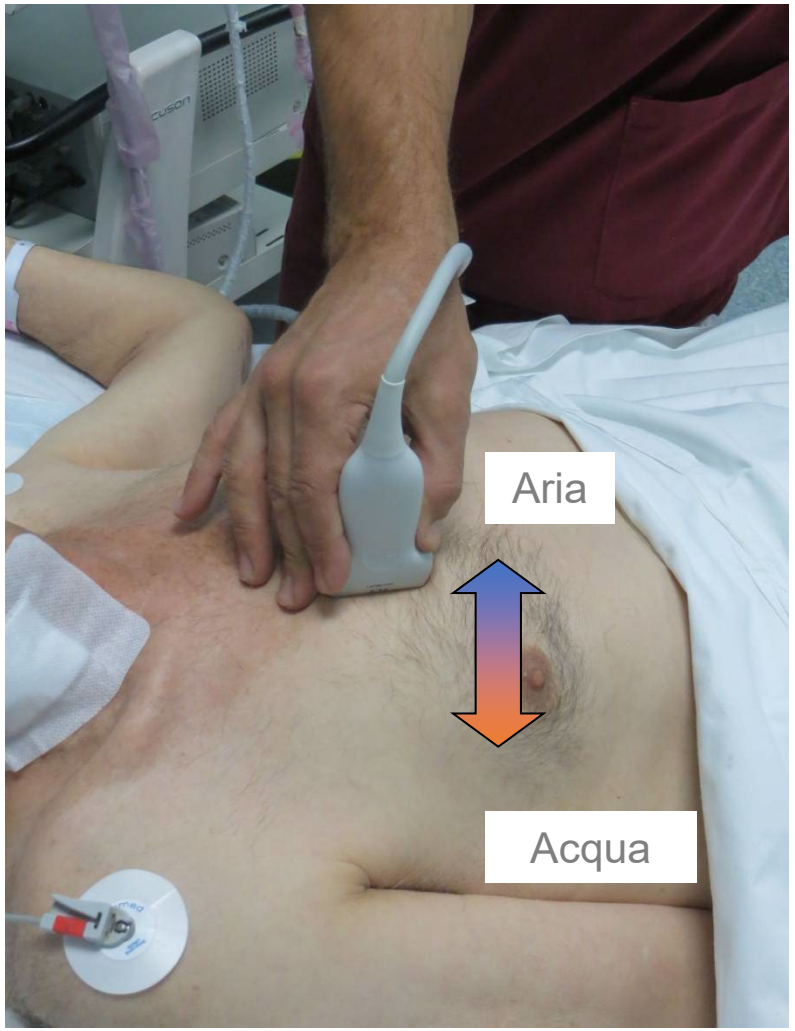
US signs of pleural effusion



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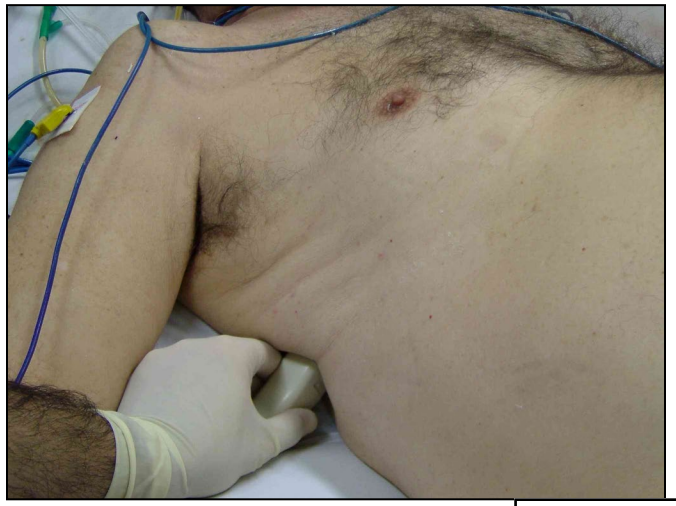

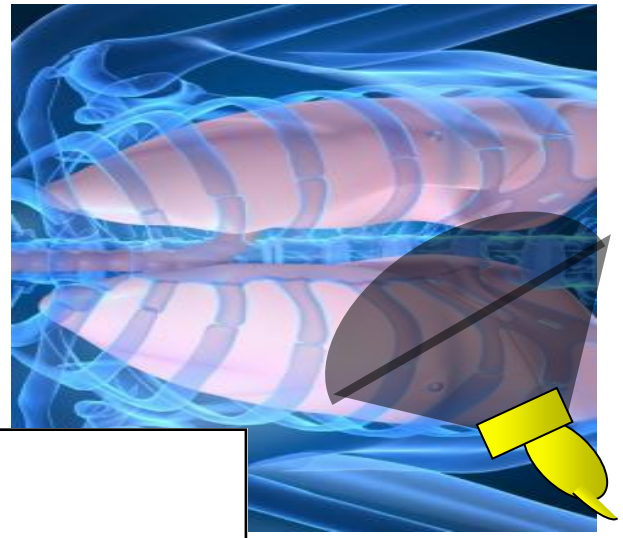

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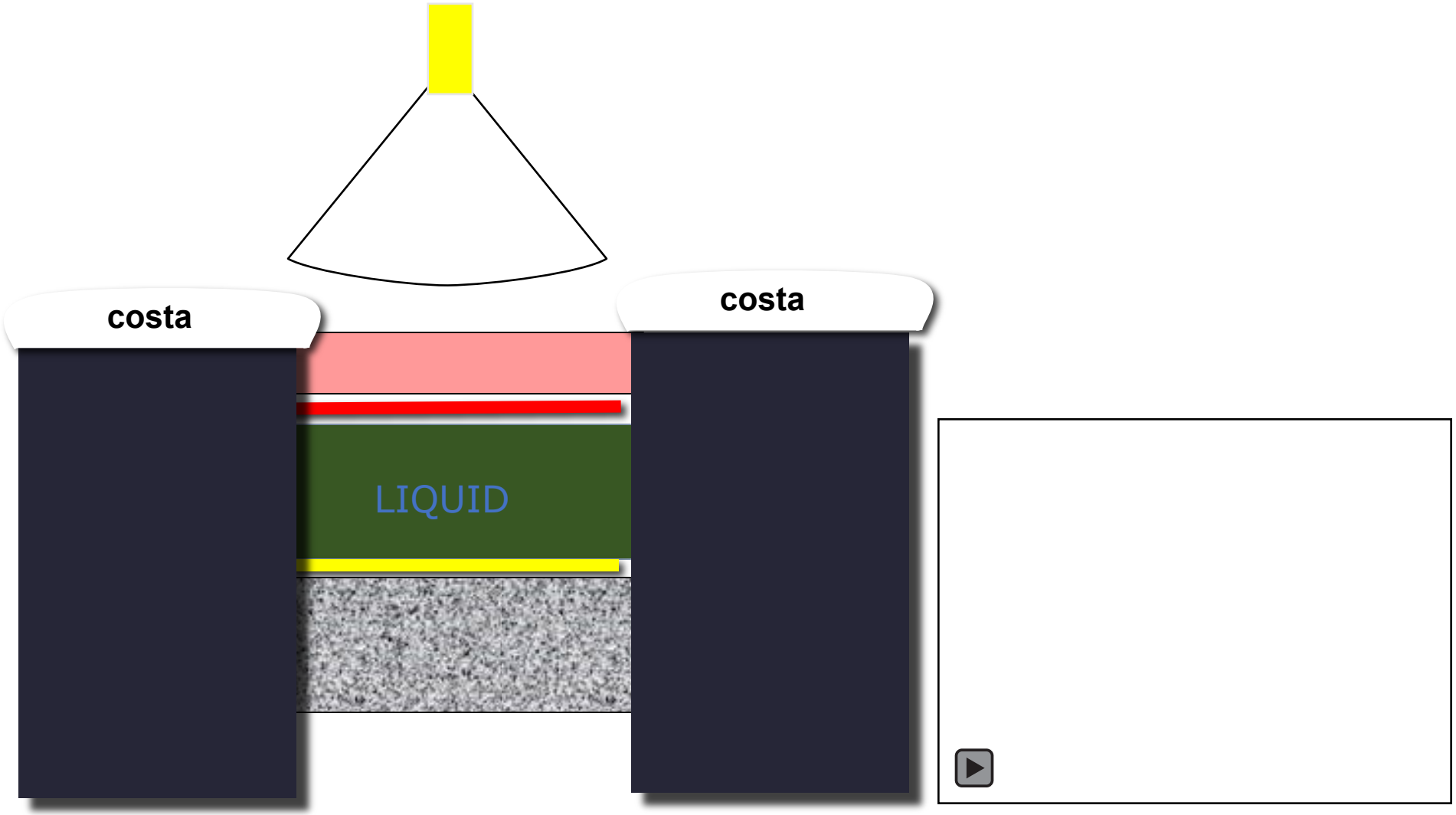

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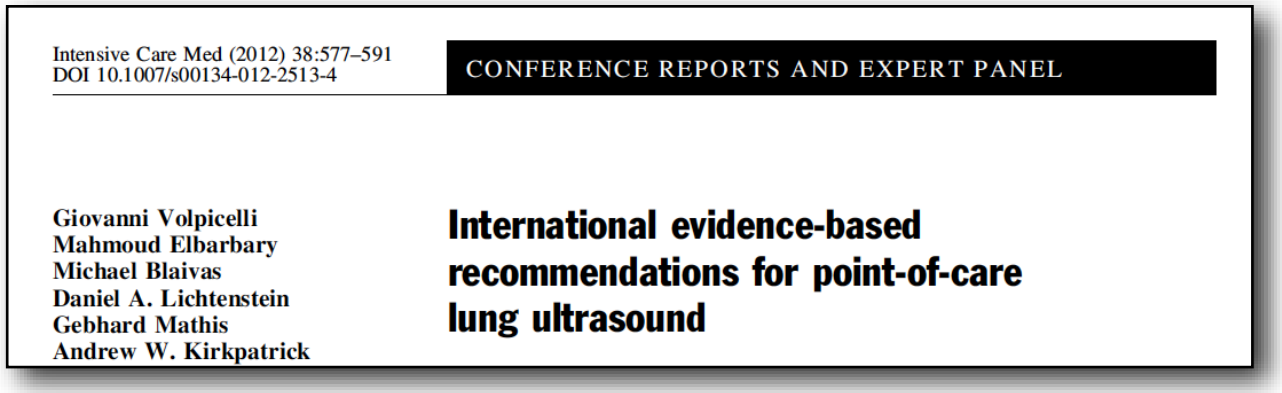
CHARACTERISTICS



Intensive Care Med (2012) 38:577–591
DOI 10.1007/s00134-012-2513-4

CONFERENCE REPORTS AND EXPERT PANEL

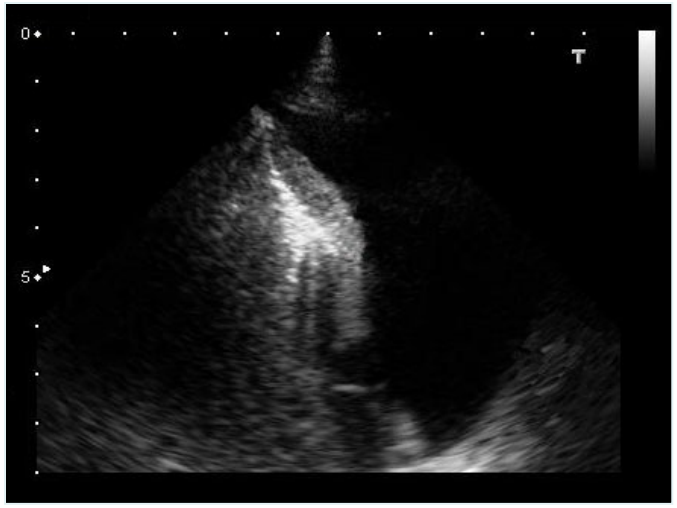
Giovanni Volpicelli
Mahmoud Elbarbary
Michael Blaivas
Daniel A. Lichtenstein
Gebhard Mathis
Andrew W. Kirkpatrick

International evidence-based recommendations for point-of-care lung ultrasound

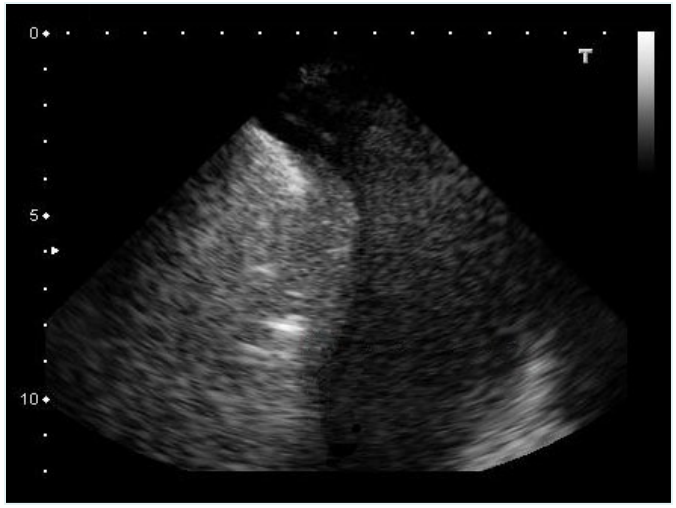
*- A pleural effusion with **internal echoes** suggests that it is an exudate or hemorrhage*

- While most transudates are anechoic, some exudates are also anechoic.

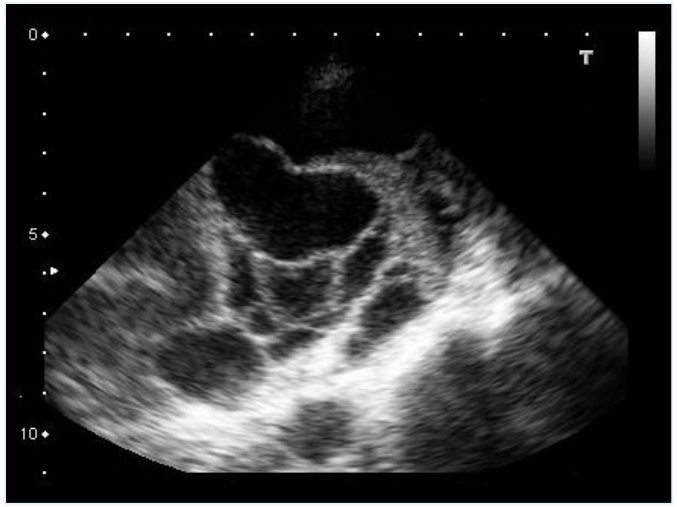
Characteristics



ANECHOIC

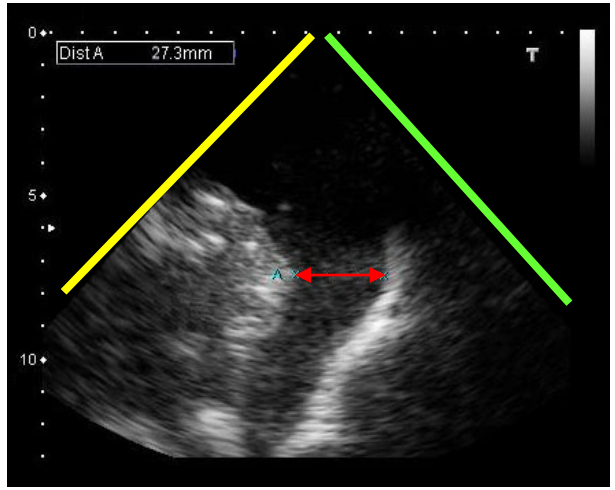


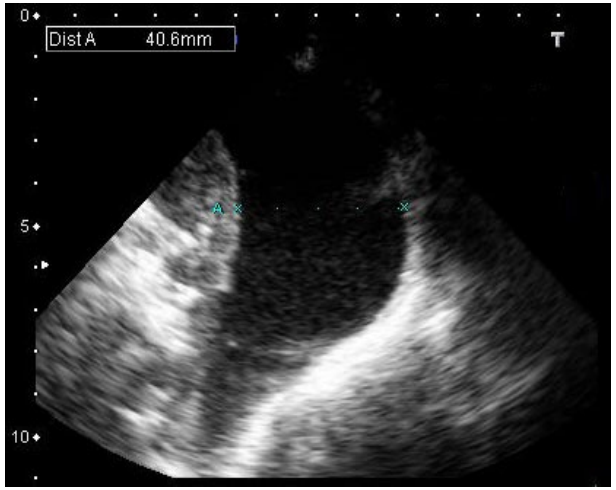
HOMOGENEOUSLY ECHOGENIC

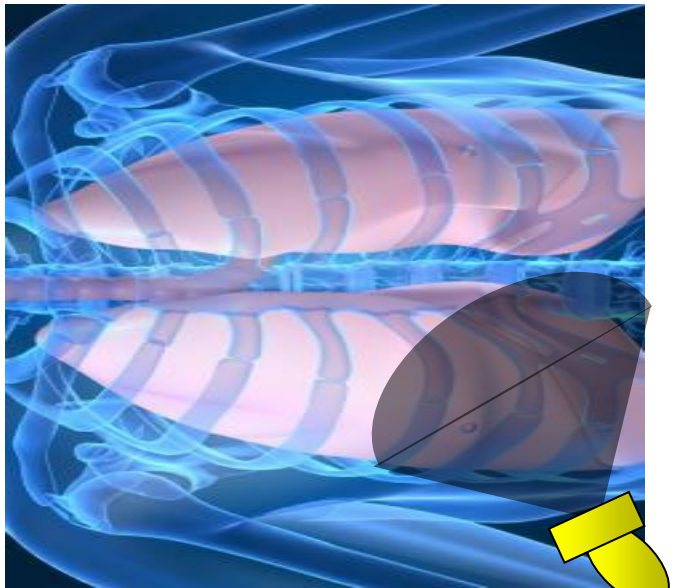


COMPLEX, NON SEPTATED / SEPTATED

Yang PC. AM J RADIOL 1992







End Expiratory IP Distance 5th intercostal space > 50 mm → **> 500 ml**

End Expiratory Basal IP Distance > 45 mm (DX) > 50 mm (SX) → **> 800 ml**

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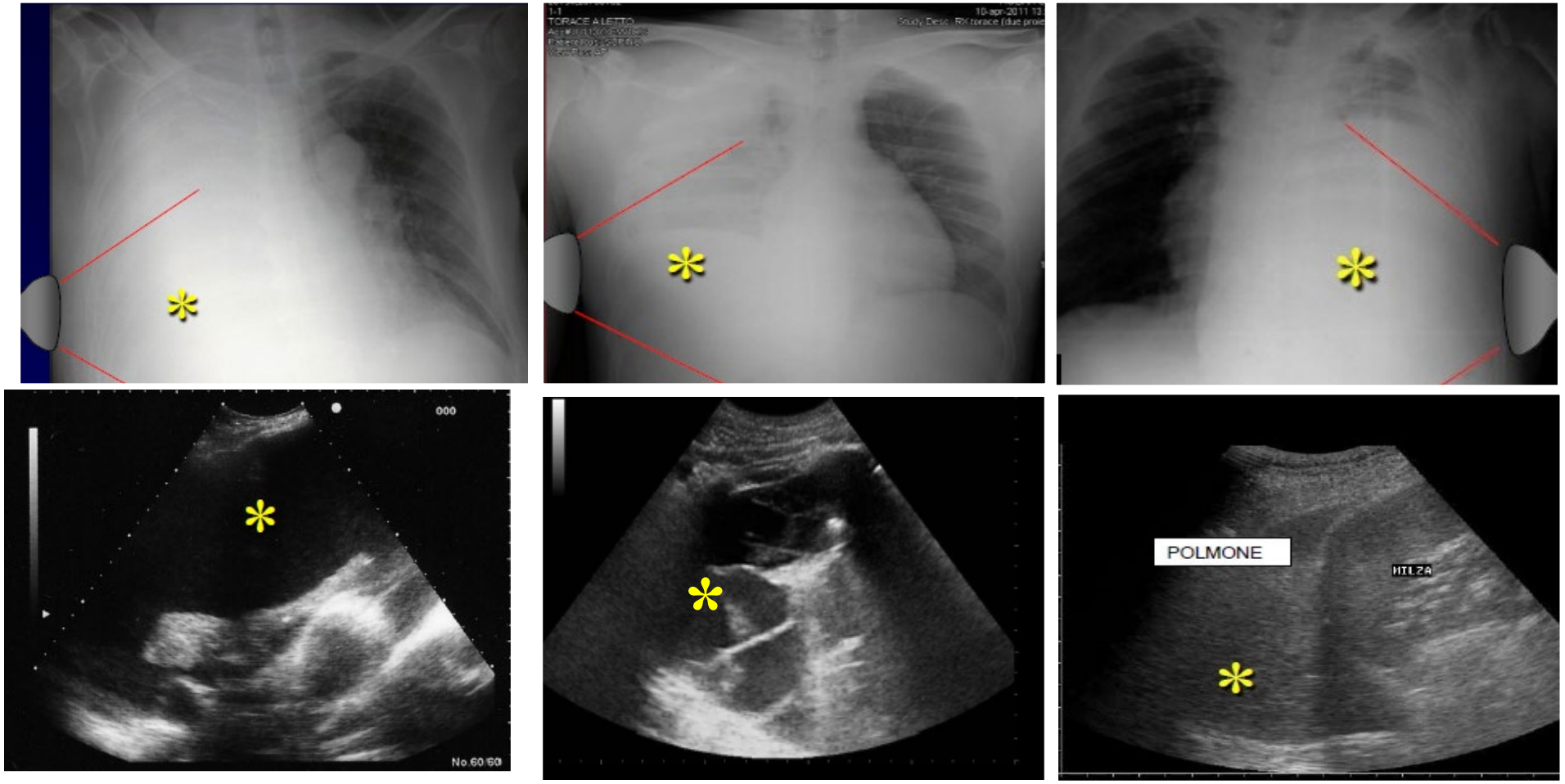
"White lung"?



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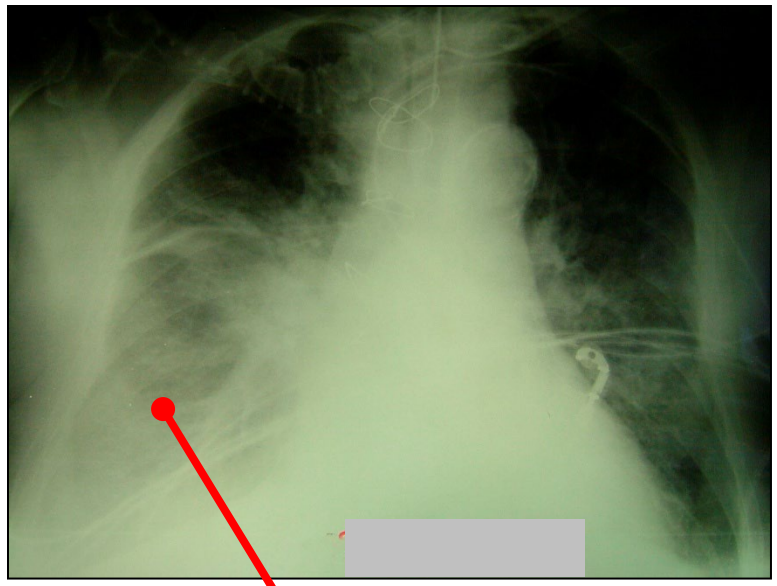
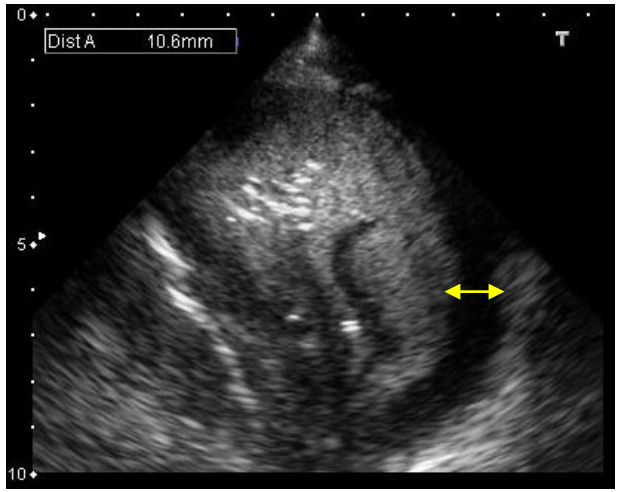
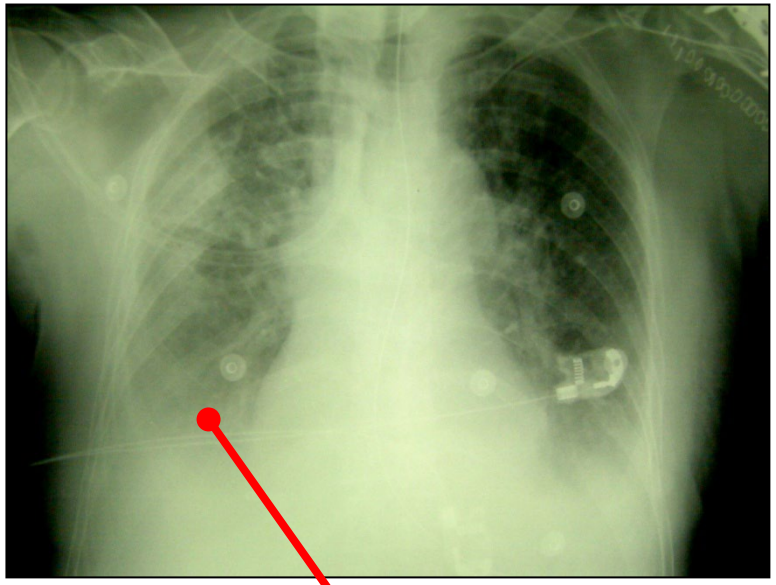
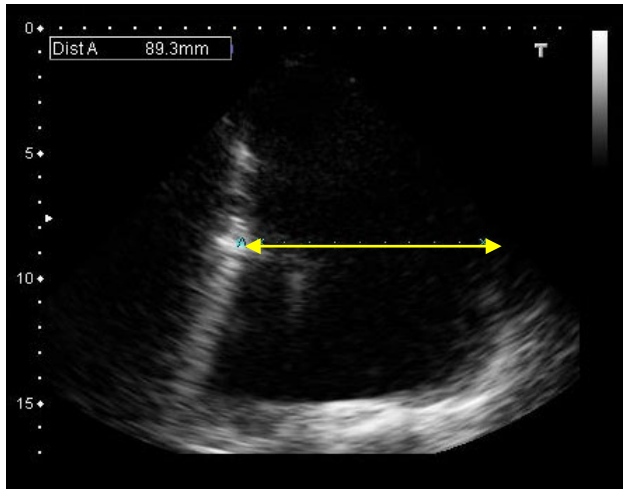








2850 ml

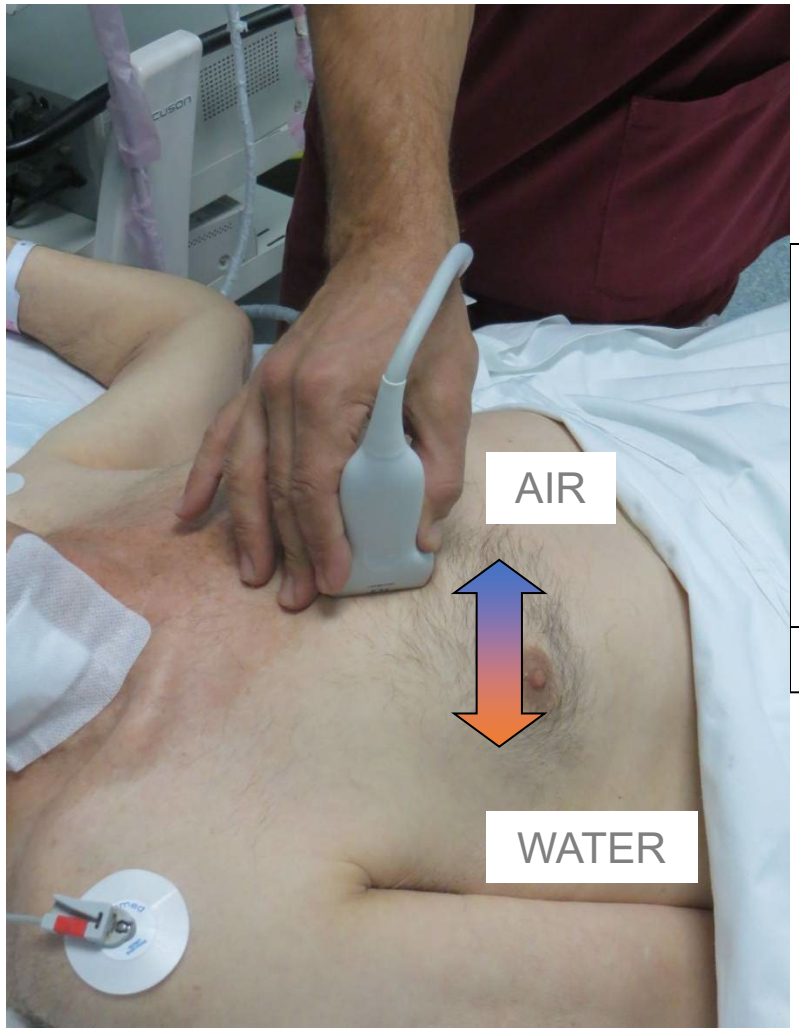
tonianile@gmail.cor

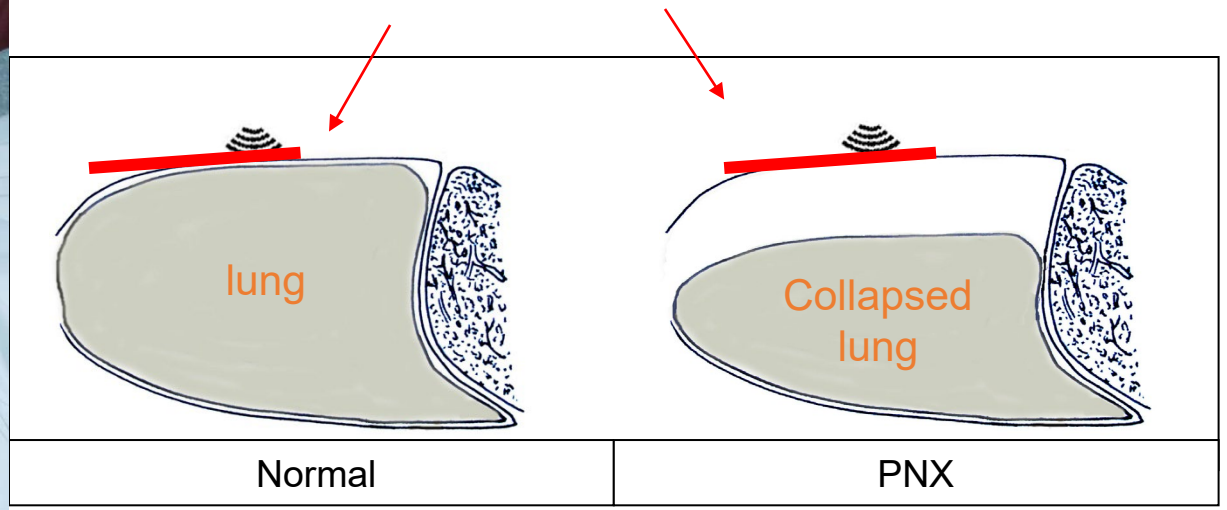
PTX

How to exclude PTX

PNEUMOTHORAX

Which kind of Air is there beneath the pleura?





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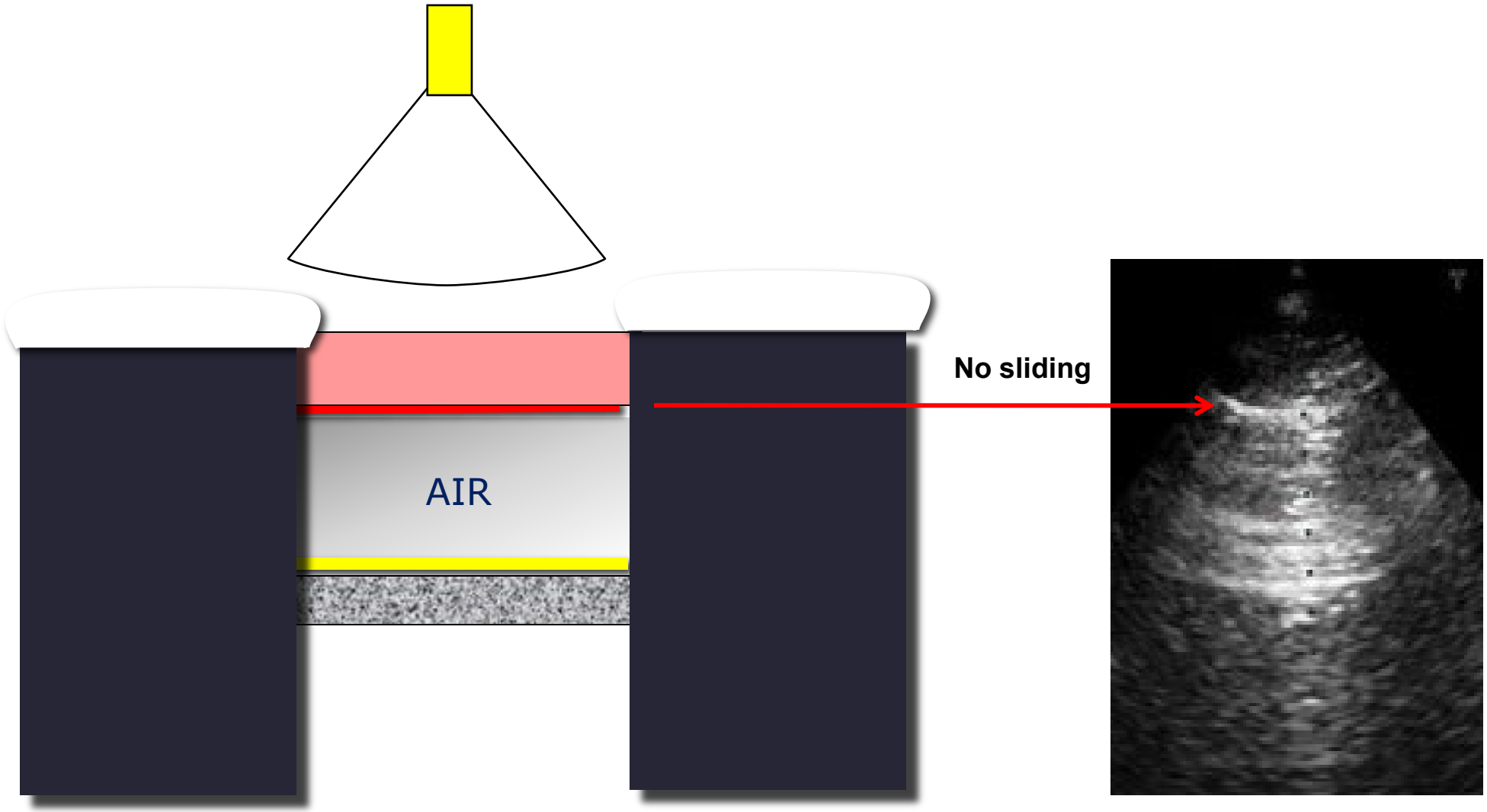

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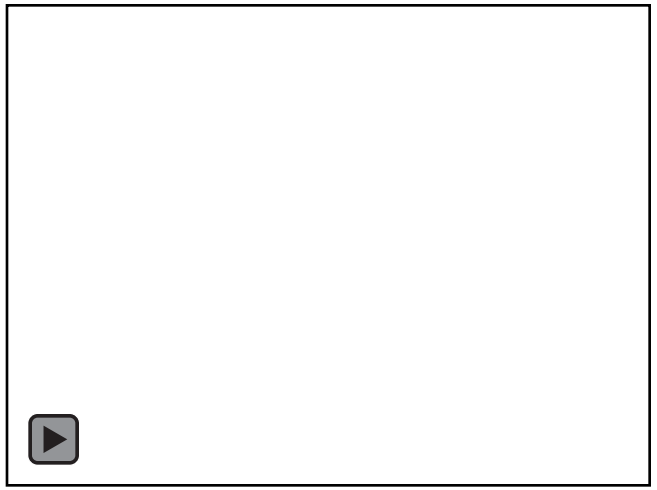
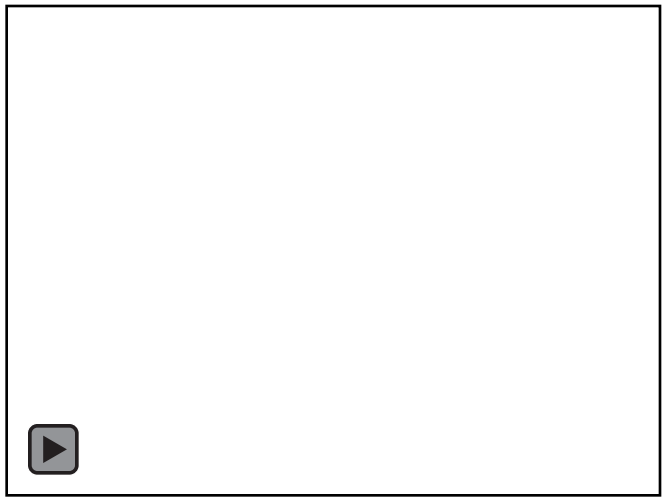
Patterns Excluding PTX

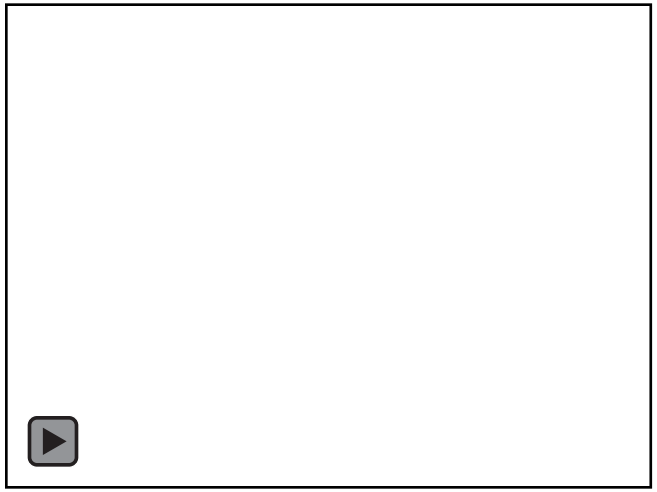


LUNG SLIDING

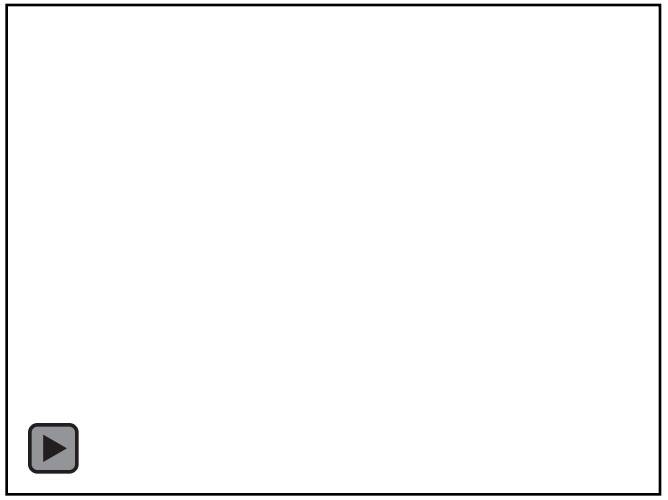


LUNG PULSE

(NPV = 100%)

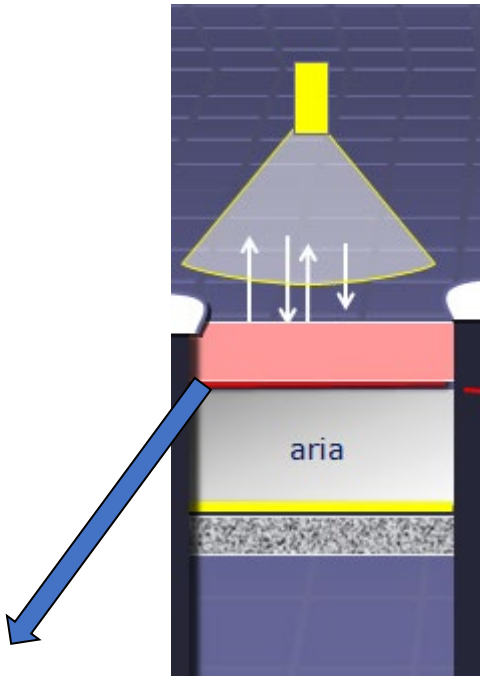


CONSOLIDATION



B-LINES

PNX:?



-No sliding

-Stratosfera in M-mode

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Emphysema
Pleural Adhesions
Very low lung compliance

Attention!

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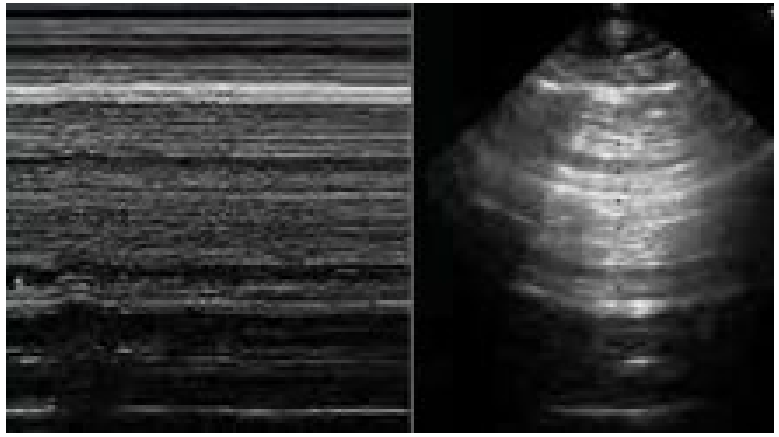
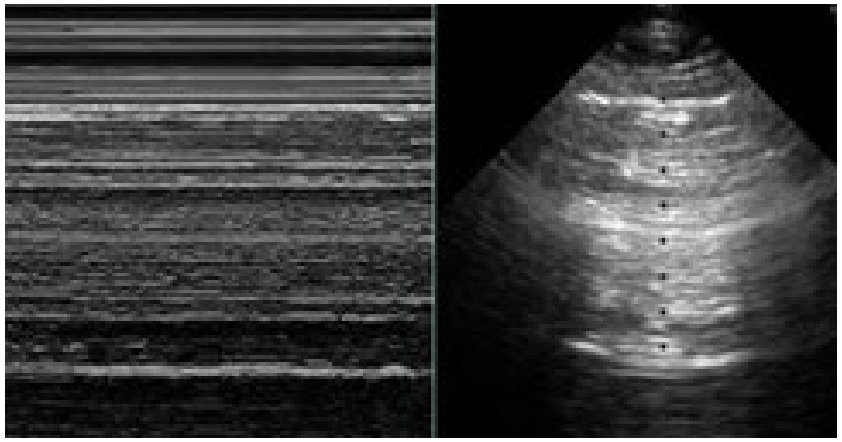
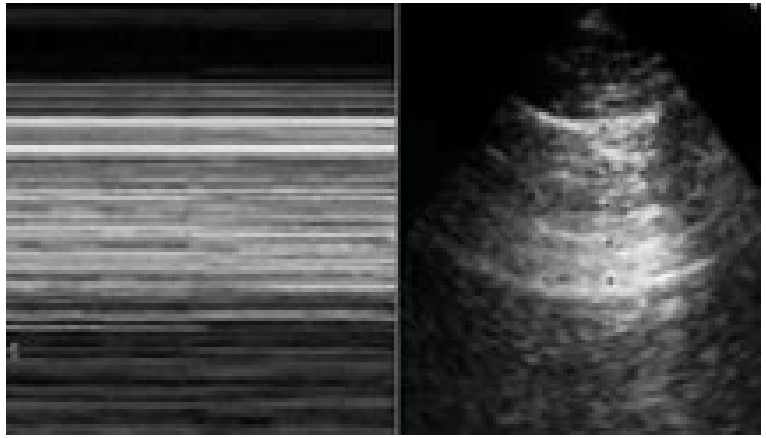
PATTERN NORMALE

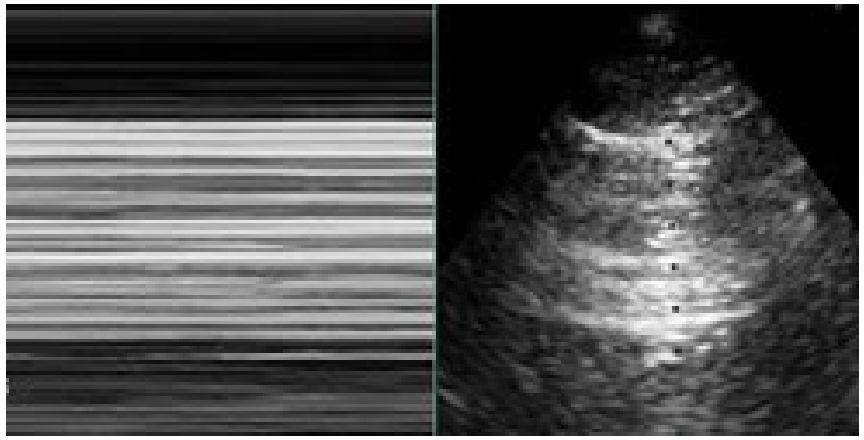




PNEUMOTORACE



No sliding ..no sabbia!



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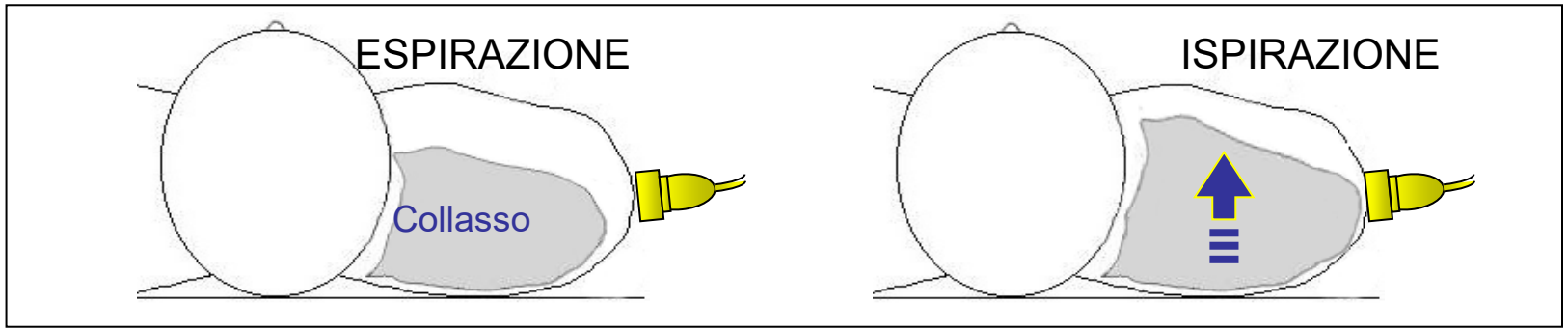
How to confirm PTX

“LUNG POINT”



Adapted from: Lichtenstein DA. INT CARE MED 2000.

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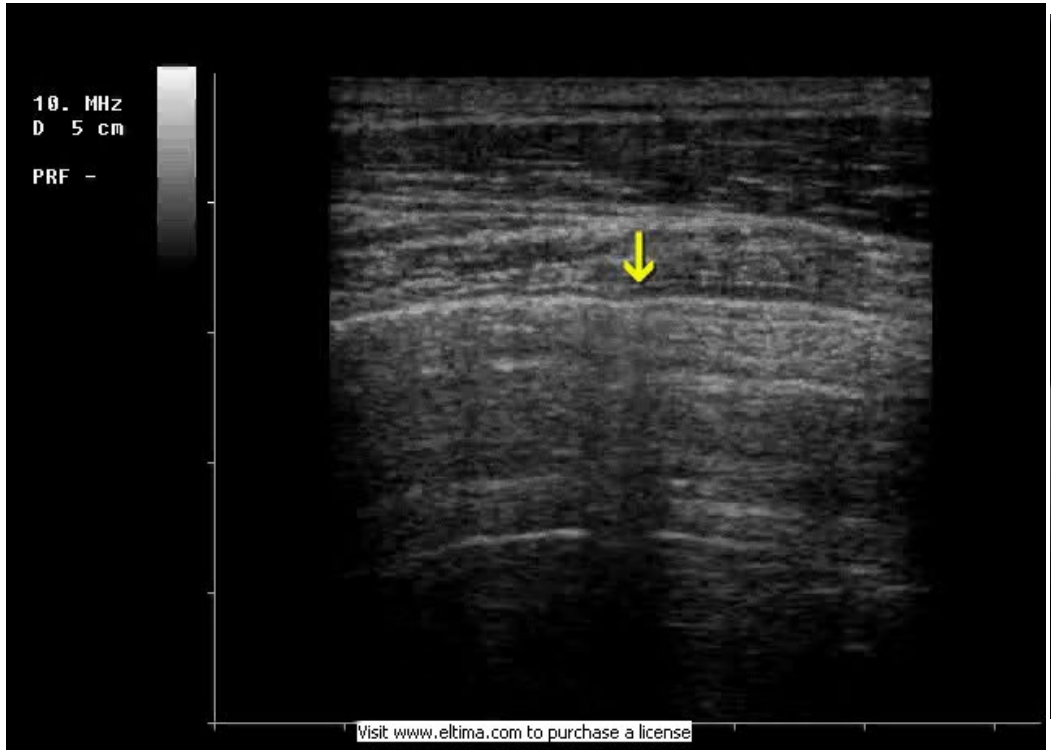
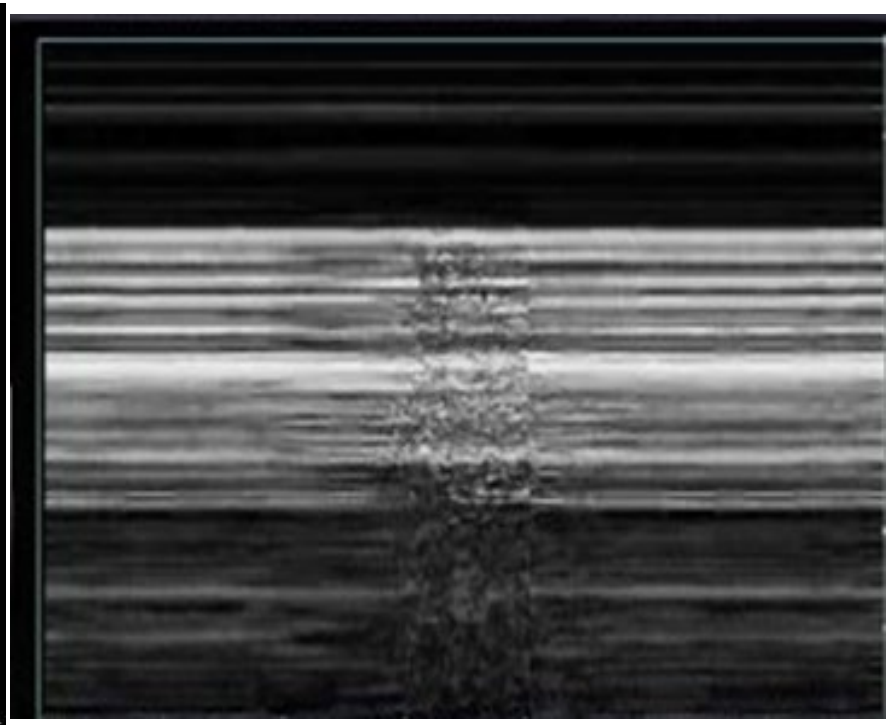
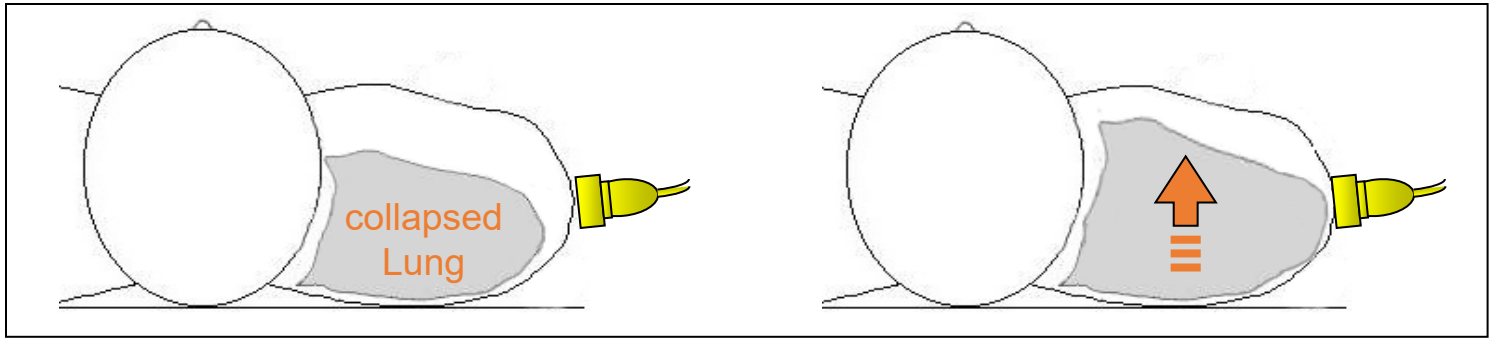
The “Lung Point”







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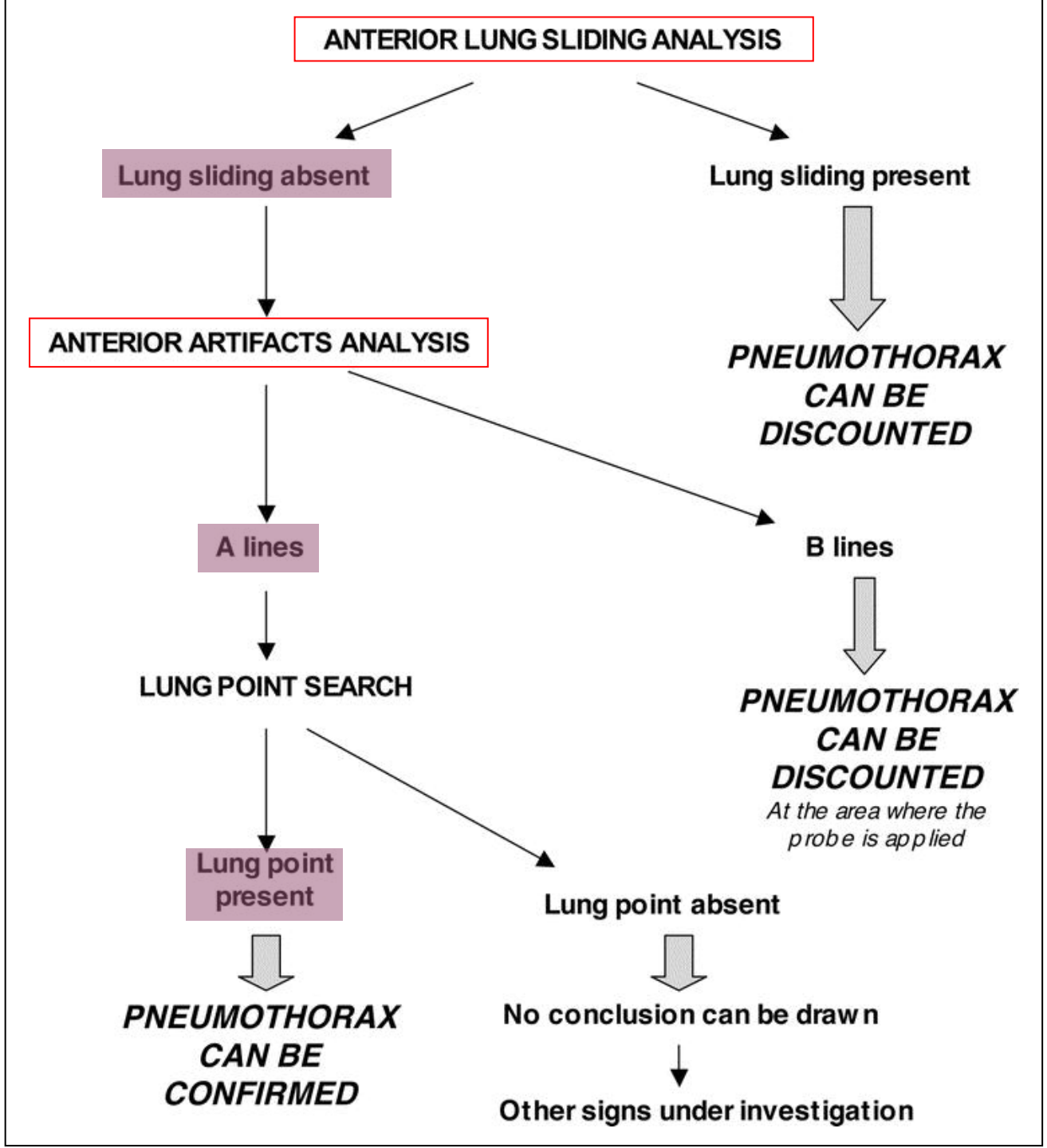
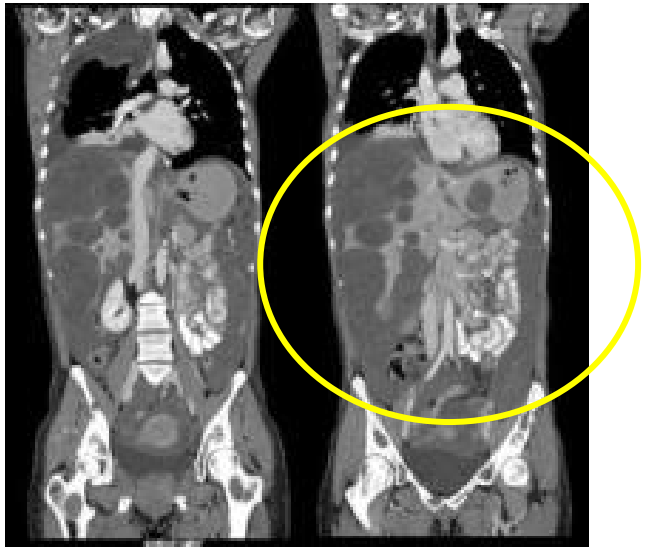
Pneumothorax Algorithm



Lichtenstein DA. CRIT CARE MED 2005.



F ocused

A ssessment with

S onography for

T rauma

"FREE FLUID"

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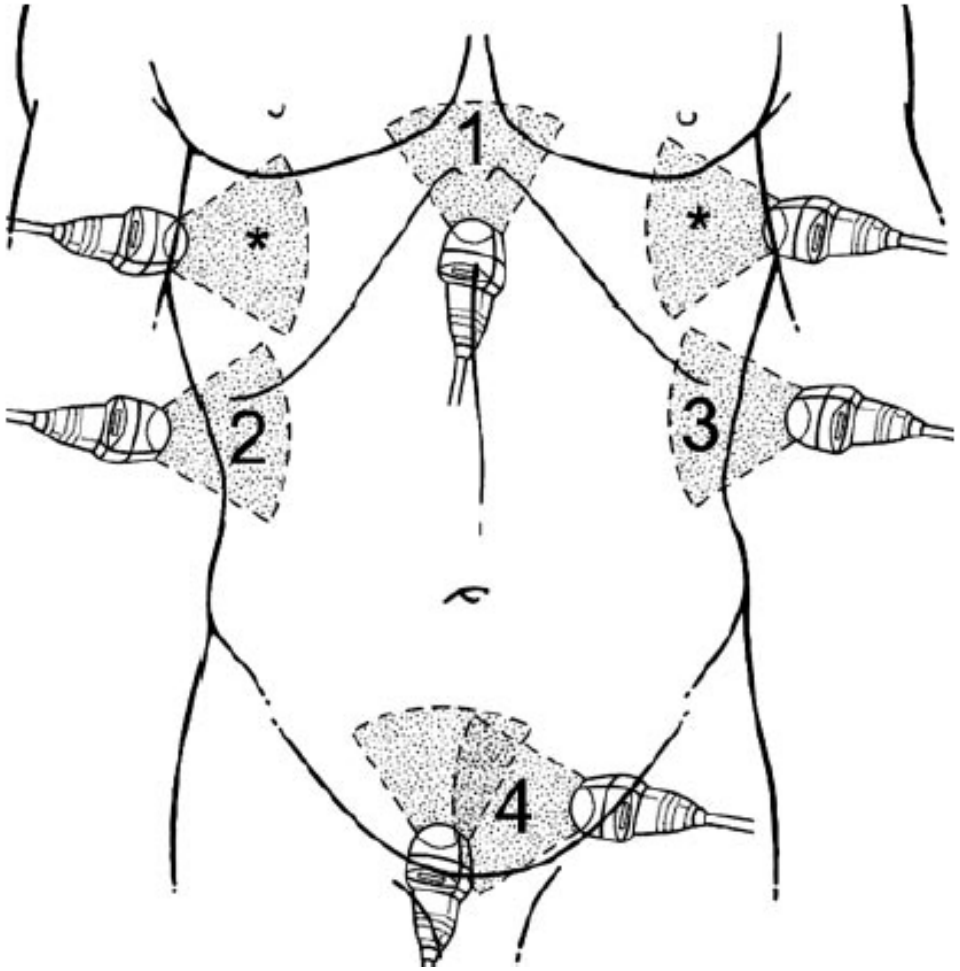
FREE FLUID?



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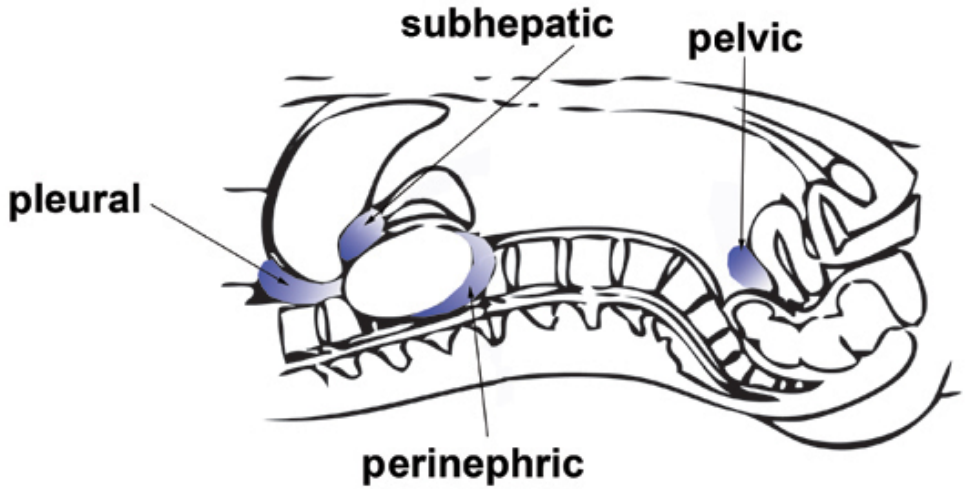
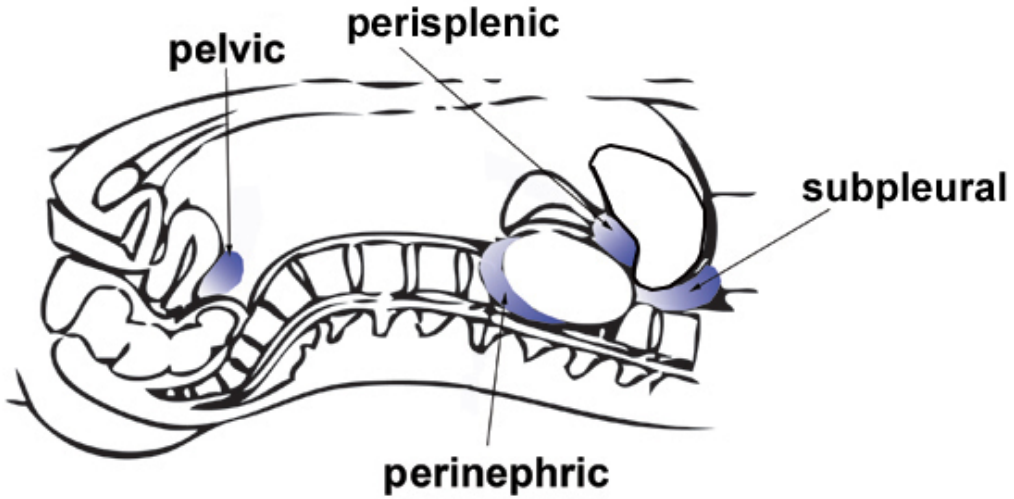


Dx



Sx

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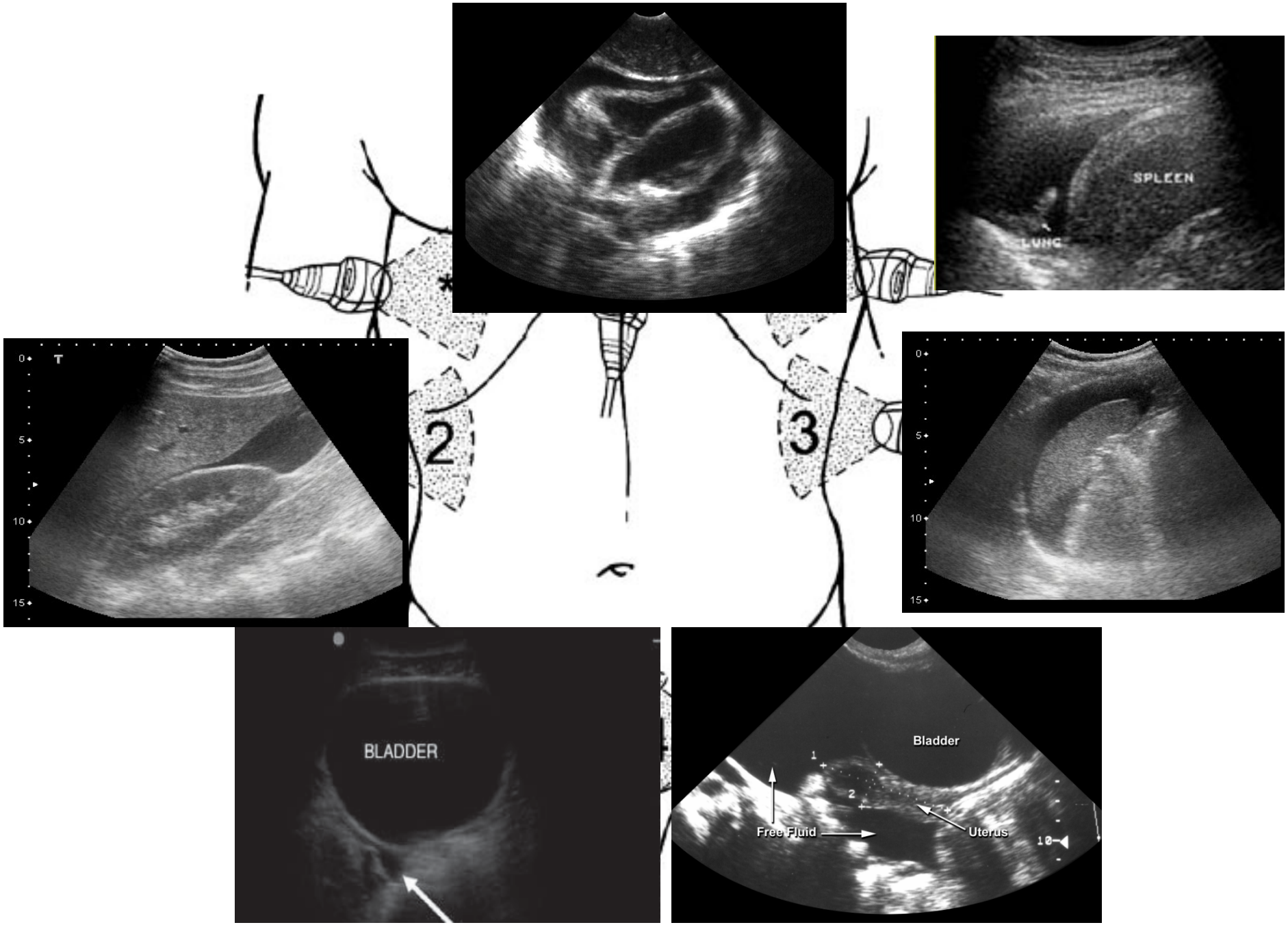

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Shock. 2018 Aug 14. doi: 10.1097/SHK.0000000000001246. [Epub ahead of print]

Renal Resistive Index: Response to Shock and its Determinants in Critically Ill Patients.

Rozemeijer S[1], Haitsma Mulier JLG, Röttgering JG, Elbers PWG, Spoelstra-de Man AME, Tuinman PR, de Waard MC, Oudemans-van Straaten HM.

Author information

Abstract

INTRODUCTION: Shock is characterised by micro- and macrovascular flow impairment contributing to acute **kidney** injury (AKI). Routine monitoring of the circulation regards the macrocirculation but not the renal circulation which can be assessed with Doppler ultrasound as renal resistive index (RRI). RRI reflects resistance to flow. High RRI predicts persistent AKI. Study aims were to determine whether RRI is elevated in shock and to identify determinants of RRI.

MATERIALS AND METHODS: This prospective observational cohort study included two cohorts of patients, with and without shock <24-h after intensive care admission. Apart from routine monitoring, three study measurements were performed simultaneously: RRI, sublingual microcirculation and bioelectral impedance analysis.

RESULTS: 92 patients were included (40 shock, 52 non-shock), median age was 69 [60-76] vs. 67 [59-76], p=0.541; APACHE III was 87 [65-119] vs. 57 [45-69], p<0.001. Shock patients had higher RRI than patients without shock (0.751 [0.692-0.788] vs. 0.654 [0.610-0.686], p< 0.001). Overall, high age, APACHE III score, lactate, vasopressor support, pulse pressure index (PPI), central venous pressure (**CVP**), fluid balance, and low pre-admission estimated glomerular filtration rate, mean arterial pressure (MAP), creatinine clearance and reactance/m were associated with high RRI at univariable regression (p<0.01). Microcirculatory markers were not. At multivariable regression, vasopressor support, **CVP**, PPI and MAP, reactance/m and pre-admission eGFR were independent determinants of RRI (n=92, Adj.R=0.587).

CONCLUSIONS: Patients with shock have a higher RRI than patients without. Independent determinants of high RRI were pressure indices of the systemic circulation, low membrane capacitance and pre-admission renal dysfunction. Markers of the sublingual microcirculation were not. TRIAL REGISTRATION CLINICALTRIALS.GOV:: NCT02558166.

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Anile *et al. Ultrasound J* (2019) 11:23
https://doi.org/10.1186/s13089-019-0138-3

The Ultrasound Journ

Renal resistive index: a new reversible tool for the early diagnosis and evaluation of organ perfusion in critically ill patients: a case report

Antonio Anile[1], Silvia Ferrario[2*], Lorena Campanello[3], Maria Antonietta Orban[3] and Giacomo Castiglione[1]

From cardiac output to peripheric perfusion: the perfusional pathway—a case report

J Emerg Crit Care Med 2019 | http://dx.doi.org/10.21037/jeccm.2019.10.07

Antonio Anile[1], Silvia Ferrario[2], Lorena Campanello[3], Maria Antonietta Orban[3], Giacomo Castiglione[1]

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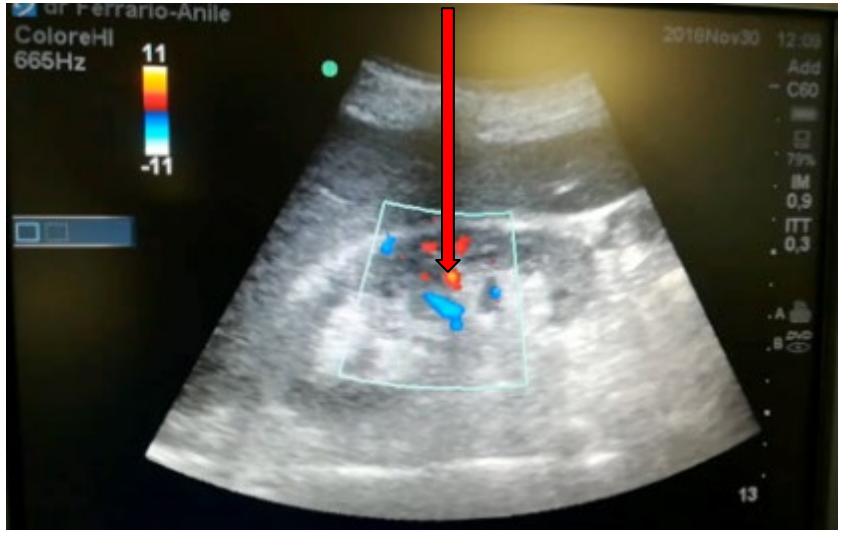
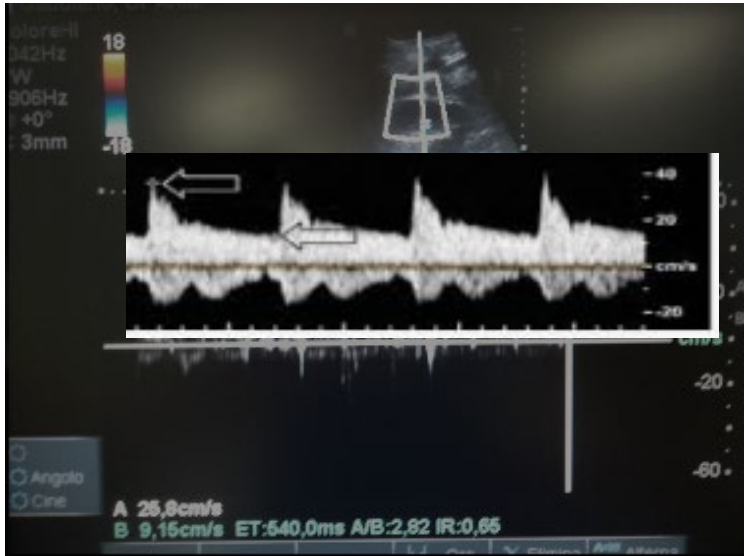


$$\frac{(VPS) - (VTD)}{(VPS)}$$



Normal < 0,7

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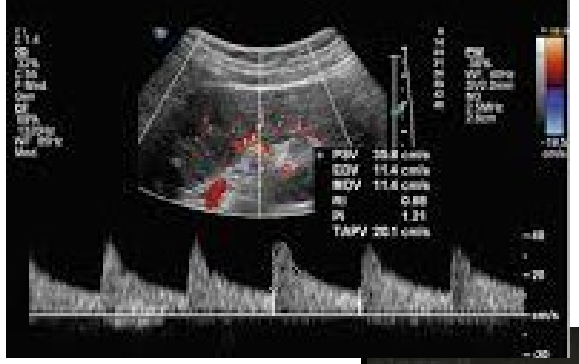

RRI=(PSV-PDV)/PSV

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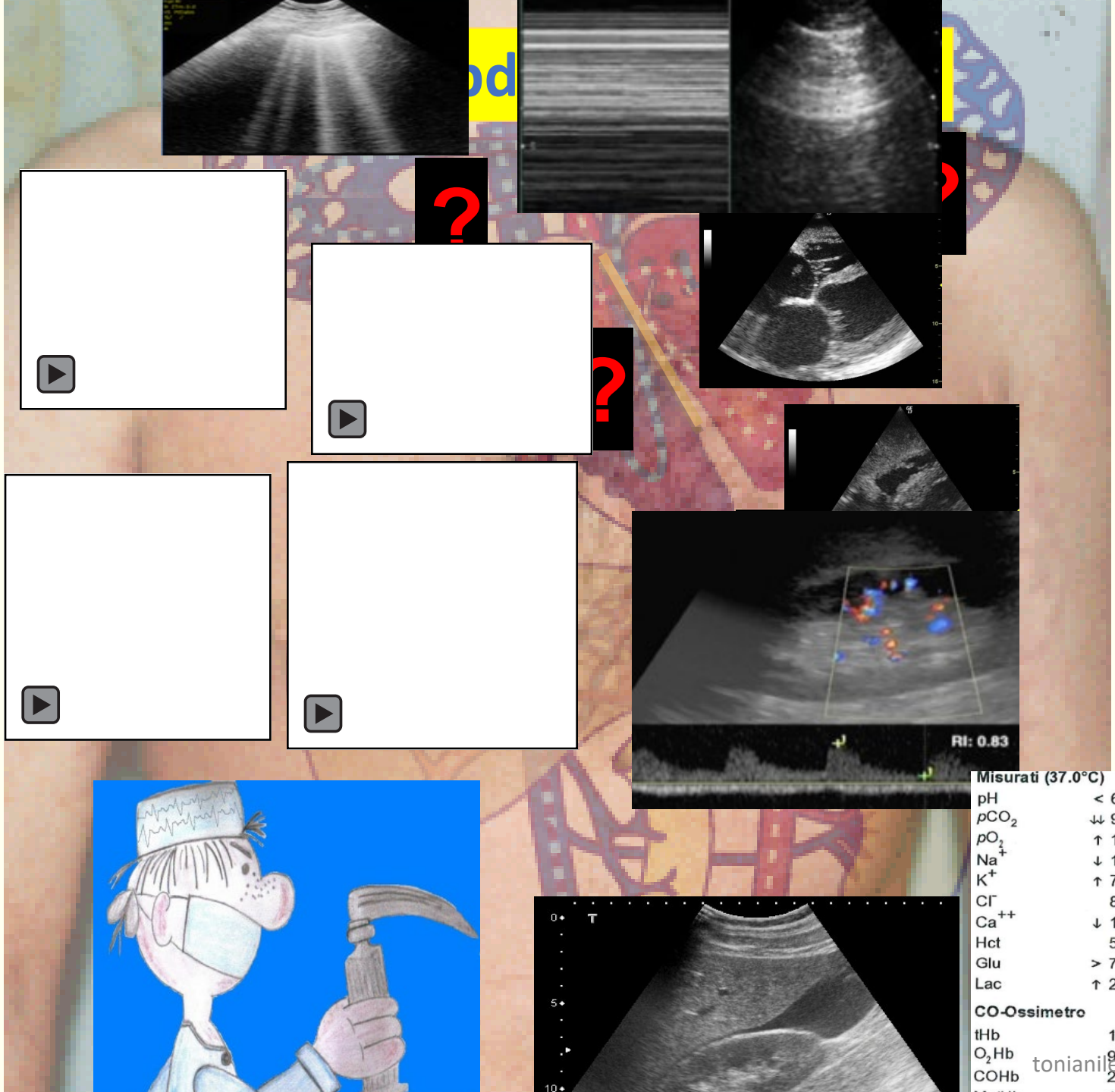

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