

LUNG ULTRASOUND AND ITS APPLICATION TO COVID-19

BY PR STEFAAN BOUCHEZ



According to Pr Bouchez, there are several lung ultrasound signs which are very suggestive for a COVID-19 pneumonia in symptomatic patients.

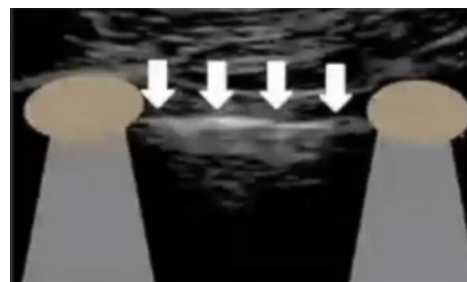
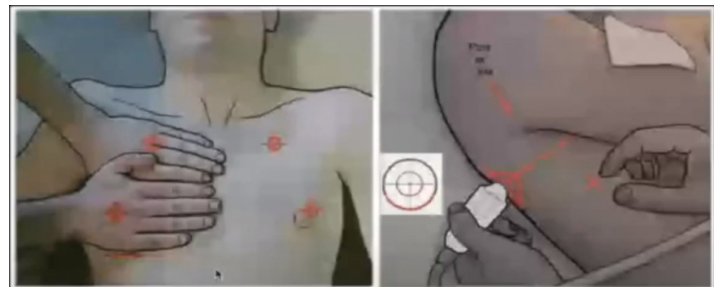
A growing number of studies are highlighting the contribution of ultrasound to the assessment of lung damage caused by the SARS-CoV-19 virus. Prof. Stefaan Bouchez, Cardiac Anesthesia at the Ghent University (Belgium), presents the method of patient profiling and its application to COVID-19.

DETERMINING THE PATIENT PROFILE

The BLUE-protocol invites first to scan the anterior BLUE-points. The BLUE-points are identified by the '2-hands' technique according to Pr Daniel Lichtenstein (diagram).

The PLAPS-points are scanned at the level of the lower BLUE-point at the posterior side of the patient.

The pleural line is a hyperechoic line below the ribs. Lung sliding is the visible motion of the pleural line during ventilation. The ultrasound visualization of two ribs together with the pleural line is called the BAT-sign and is the basic lung ultrasound image for the evaluation of the pleura and its artifacts.



The pleural line is visible under the white arrows.

A PROFILE

Lung sliding and A-lines.

The A-lines indicate the presence of air in the lung. They may be present in case of pneumothorax, but will not be coupled with lung sliding.



Visualization of the A Lines using lung ultrasound.

B PROFILE

B-line identifications :

- Arise from pleural line
- Laser-like comet tail artifacts
- Move with lung sliding
- Erase the A-lines

Interpretation

- > 2 B-lines at anterior BLUE-points :
→ Pulmonary edema.

B-lines are normal at the dependent areas

B-lines exclude pneumothorax.

Important point to remember...

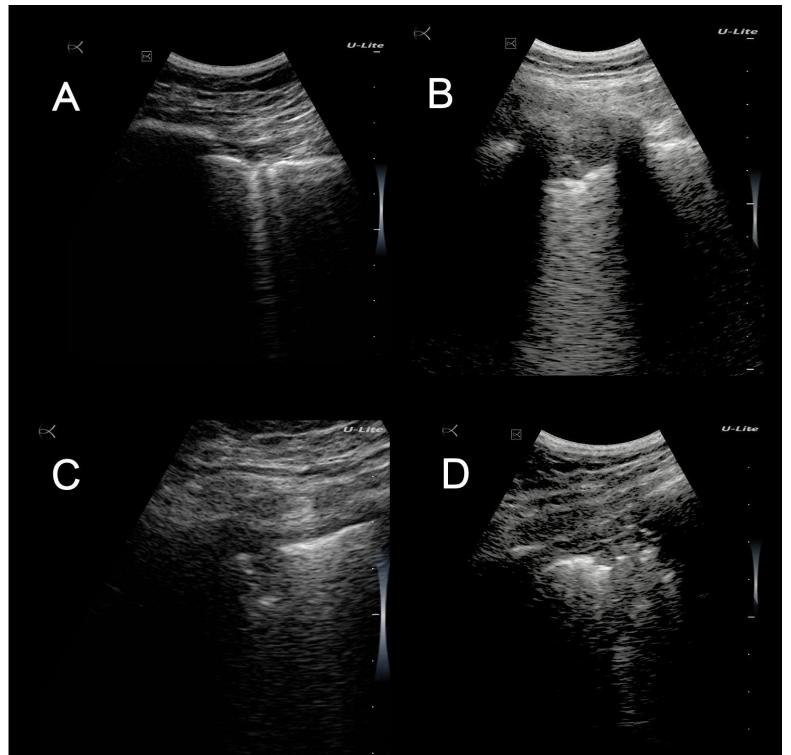
one must not fail to check the vascular system and venous and search for thrombus, which is more common in COVID patients.

APPLICATION TO COVID-19

Despite the recent nature of the SARS-CoV-19 virus, several recurrent factors could be observed.

There are several lung ultrasound features present in COVID-19:

- Thickened and irregular pleural line, irregular (C-profile) : *A*
- B-lines sometimes confluent (ground glass) : *B*
- Subpleural consolidations +/- B-lines : *C*
- Larger consolidations with air bronchograms : *D*
- Pleural effusion can be present but is often limited : *D*



WHICH EQUIPMENT TO CHOOSE?

Pr Stefaan Bouchez gives us his recommendations on the most suitable ultrasound equipment.

THE ULTRASOUND SCANNER

- Ultraportable: easy to move around, no need to plug it in
- Quick start: can make the difference in critical situations
- Touch interface: cleans easily with a wipe

THE PROBE

- Universal: probe allowing to see all organs (lungs, kidneys, liver, heart)
- Low frequency: 4-9 MHz

Prof. Bouchez uses the ultra-portable ultrasound U-Lite associated with the microconvex probe.

COVID-19 EMERGENCY PLAN OF ACTION



SONOSCANNER
Premium Diagnostic Ultrasound



Emergency telephone number: +33 (0)6 75 60 55 97

Contact: Mr. Etienne RICHARD, International Coordinator

etienne.richard@sonoscanner.com

Website Order Access: www.sonoscanner.com