**Lung Ultrasound (LUS) Protocol**

**Sparse Composite:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Examiner</th>
<th>Smoker</th>
<th>Patients position</th>
<th>Respiration</th>
<th>Convex transducer</th>
<th>Linear transducer</th>
<th>Pocket ultrasound device</th>
<th>Documentation</th>
<th>Ultrasound device</th>
<th>Date of first complaints</th>
<th>Clinical suspicion of COVID-19</th>
<th>Comorbidities</th>
<th>Pleural effusion</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
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**INVESTIGATION AREAS**

<table>
<thead>
<tr>
<th>Areal</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>anterior cranial</td>
</tr>
<tr>
<td>2</td>
<td>anterior caudal</td>
</tr>
<tr>
<td>3</td>
<td>lateral cranial</td>
</tr>
<tr>
<td>4</td>
<td>basal caudal</td>
</tr>
<tr>
<td>5</td>
<td>dorsal cranial</td>
</tr>
<tr>
<td>6</td>
<td>dorsal caudal</td>
</tr>
</tbody>
</table>

**Right Lung**

- **RIGHT LUNG**
- **PSL**: parasternal line
- **AAL/PAL**: anterior / posterior / axillary line.
- The two posterior areas 5/6 are best investigated in the lateral positions.
- In the case of pathological findings, the transducer position could be marked with a felt pen for follow-up scans.

- **pleural effusion:**
  - no
  - yes:
    - small volume
    - moderate volume
    - large volume

**Conclusion:**

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Lung Ultrasound Protocol – DEFINITIONS

Preliminary note: Self protection is top priority - especially in positive Covid-19 infection use full personal protective equipment against droplet and airborne transmission as there is close contact with the patient. Consider scanning the patient’s left side from the left side of the bed thereby avoiding stretching across the patient which latter increases face to face proximity considerably. Also try to limit the scanning time in these cases. Adequate hygiene protocol for the ultrasound device! Protective plastic cover for the ultrasound device may also be discussed!

Device setting: A convex transducer is recommended for intercostal ultrasound examination of the pleura and lung to optimally display artefacts of diagnostic relevance including pleural surface irregularities and ultrasonic B-lines. Correlation with contemporaneous and previous X-ray or CT images and the clinical picture, including differential diagnoses is required.

Fragmented pleura
Irregular, interrupted (mm) and thickened pleural line, partly subpleural, hypoechoic areas.

Consolidation
Echopoor subpleural area (> 5 mm) with liver- or tissue-like echo structure.

Air bronchogram
Air-filled bronchi (branching/curvilinear echogenicities) within a consolidated area.

“B-Lines”
Here the classical B-lines [a] arising from the intact pleura „sound of lung water“, described as three or more bright lines within an intercostal space and „comet tail artefacts“ [b] [artifacts arising from pleural pathologies with an irregular pleural surface, also seen at the edge of consolidations] were put together in the group „B-Lines“ as they are sometimes hard to distinguish.

Literature:

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