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## The Utility of Ultrasound Extends Beyond Interstitial Pneumonia Assessment in COVID-19 Patients

### From:

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Dear Editor,

We read the recently published letter by Vetrugno et al. (1). In this letter, the author discussed the value of lung ultrasound (LUS) and its comparable, if not superior, sensitivity compared to chest computed tomography (CT). In another letter, the same author discusses the significance of finding evidence of interstitial pneumonia evidenced by the B-pattern in the diagnosis of COVID-19; nonetheless, the author acknowledges lack of specificity of this finding (2). In a recent meta-analysis of seven studies (122 patients), we found that the B-pattern is consistently prevalent (97%, 95% CI: 0.94–1.00 I<sup>2</sup> 0%) among COVID-19 symptomatic patients (3). Additionally, we found 70% and 54% frequency of finding pleural line abnormalities and pleural thickening, respectively, although they were heterogeneous among constituent studies. Although the finding is nonspecific, we concur with the author that amid a pandemic, this finding may facilitate the triage, diagnosis, and management of COVID-19 patients. We also agree that even if the CT scan is deemed superior, its use is limited. This is due to cost, difficulties of patient transfer, and availability, especially when dealing with large patient volumes. Moreover, Guorong et al. demonstrated a role for LUS in the follow-up of patients with COVID-19 (4). The absence of radiation exposure with LUS gives it an edge for follow-up compared to CT.

The value of ultrasound extends beyond the assessment of the pulmonary interstitium. Zotzmann et al. hypothesized a role for point of care LUS in the diagnosis of COVID-19-related pulmonary embolisms (5). Knowing the disease is prothrombotic, they scanned ten patients with high d-dimers and found that three had subpleural consolidations. The three patients were found to have segmental pulmonary embolisms on CT scan. Tee et al. further tested contrast-enhanced ultrasound to improve the detection of lung microinfarcts and demonstrated this in one patient (6). The author stated that microthrombi-related-consolidations do not enhance compared to consolidations related to other etiologies. Llitjos et al., in a systematic assessment of venous thromboembolism (VTE) in critically ill COVID-19 patients revealed an

extremely high proportion of VTE events (69%) (7). These studies add to the value of ultrasound in detecting VTE events, a dreadful complication related to COVID-19 that can be mistaken for SARS-CoV-2 infection progression in patients with acute respiratory compromise.

Another complication that can be confused with acute COVID-19 disease progression is pneumothorax. Consoli et al. highlighted the value of lung ultrasound in the evaluation of pneumothorax in COVID-19 patients. The diagnosis is made by the absence of lung sliding and evidence of a barcode sign on M mode (8). Besides assessing the lung's interstitium in the initial diagnosis and follow-up, and evaluating COVID-19 complications (pneumothorax and VTE), Guaracino et al. discussed the role of lung ultrasound in the mechanical ventilation weaning process (9). This is established by assessing the diaphragmatic excursion (DE), and the diaphragm thickening fraction. A DE of 30% indicates higher chances of weaning success.

This is only a fraction of what ultrasound can do, and how it can guide our therapeutic decisions amid this pandemic. We will learn more about this modality as data continues to aggregate. We also hope that the utility of this useful modality extends to beyond the pandemic.

### CONFLICT OF INTEREST

None declared by the authors relevant to this letter.

### AUTHOR'S CONTRIBUTION

The paper was written and revised by MFHM.

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