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REPLY

In April 2020, we reported our experience performing lung ultrasound (LUS) on the first pregnant woman admitted for coronavirus disease 2019 (COVID-19) pneumonia.¹

Sperandeo et al² raise doubts about the use of LUS for the investigation of patients with COVID-19 pneumonia. Although some observations are reasonable, other statements lack precise scientific and clinical evidence. Although LUS cannot scan the entire surface of the lungs, this limitation is not relevant because lung involvement in COVID-19 is typically patchy, multifocal, peripheral, and mainly localized in the posterolateral sites, as clearly demonstrated by computed tomography scan.

We agree with the statement that vertical artifacts represent simplistically a sort of “image error” generated by the interaction of ultrasounds on porous tissues. However, this interaction generates information, as documented in some of our publications. This information does not refer to a specific disease but rather to an estimation of the subversion of the peripheral airspace geometry of the lung, thus generating acoustic traps.³ This finding must be interpreted on a clinical basis. COVID-19 pneumonia shows multiple and irregular peripheral alterations of lung density and structure, as evident from anatomopathologic studies.

The authors claim to detect artifacts in intestinal loops and after a pneumonectomy. In our experimental models, we found artifacts in soaked synthetic foams and even in bullous suspensions. This means that LUS artifacts signal the physical states of the explored surface. They carry information on the density and the distribution of air in a bubbly mean, as is the structure of the lung. Therefore, in our models, vertical artifacts can be documented, with their spectral identity, even in lungs with interstitial disease.

We do not agree with the authors’ statement that LUS in COVID-19 pneumonia “is limited and can be confusing.”² We have always stated that the role of LUS is to identify structural change of the assessable lung surface and, consequently, to support clinical hypotheses.

COVID-19 pneumonia in pregnant women is quite instructive. LUS pattern of COVID-19 pneumonia is not pathognomonic, being identifiable in other diseases.² However, in an epidemic clinical context and in a pregnant

woman, with low pretest probability of underlying diffuse pulmonary diseases, even nonspecific signs can help with the diagnostic process, especially in the absence of not perfectly reliable nasopharyngeal swabs and serologic tests.

Awaiting further studies better explaining the accuracy of LUS in COVID-19 pneumonia, we believe that the categorical statement “ultrasound use [...] must be firmly discouraged” is not appropriate because it cannot express a correct scientific attitude. ■

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This communication has been published in the middle of the COVID-19 pandemic and is available via expedited publication to assist patients and healthcare providers.

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