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Is it time to measure lung water by ultrasound?

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Dear Editor,

The study with 20 patients by Baldi et al. [1] proposes a partially novel application of lung ultrasound in intensive care medicine. They write that "B-lines are correlated with lung weight and density determined by computed tomography (CT)," so that they conclude that "lung ultrasonography (LUS) may provide a reliable, simple, and radiation-free lung densitometry in the intensive care setting" [1]. This conclusion, in our view, is not adequately supported by the present data. Moreover, LUS for lung congestion diagnosis has low predictive power (low sensitivity and specificity), with information that does not discriminate between different conditions [2]: it can be unreliable if not used jointly with thorough clinical assessment. Respiratory function monitoring validated tools have different criteria and features [3].

Actually, the proposed B-lines score has no definite validation through established direct/surrogate lung fluid measurements, and a critical reappraisal is needed. We previously reported, using the different and most currently used criteria, the lack of difference of the number of B-lines in different conditions: heart failure and acute pulmonary edema versus heart failure and pleural effusion and versus pulmonary fibrosis [2]. Did authors challenge their methods in diseases without lung congestion but with many B-line artifacts, such as pulmonary fibrosis [4] and in other conditions [5], finding any significant differences?

The regression lines published in the article [1] show an almost perfect relationship of B-line number versus CT-assessed lung density and weight (0.5–2.5 kg). Nonetheless, the weight of the normal adult lung is 0.8–1.2 kg, so we should reasonably imagine that patients have different body dimensions. Are authors measuring a relationship mostly related to body weight as a confounding variable? Moreover, how can the authors be certain that the increase in lung "weight" is due to "interstitial congestion" and not to lung consolidation (atelectasis with pneumonitis, pleural effusion, hemorrhages, and other conditions)?

Probably we still need more reliable noninvasive tools for assessing lung water content and its changes.

Thank you for your interest and consideration.

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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