

## Thoracic ultrasound: Possible complementary criteria for the assessment of pulmonary fibrosis

Sir,

We read with a great interest the article by Hasan *et al.*,<sup>[1]</sup> which elegantly present a novel method for the thoracic ultrasound (TUS) assessment of interstitial lung diseases (ILDs). They appropriately state that the role of transthoracic lung ultrasound is valuable as a complementary non-invasive technique in the assessment of a variety of pulmonary conditions: This is reported in several studies and is also our experience and lasting clinical practice since 25 years. In their article,<sup>[1]</sup> they report that other authors found “a positive correlation between the number of lung comet [B-lines] and the extent and degree of pulmonary fibrosis detected by high-resolution computed tomography (HRCT)”; we would address, differently, that the unreliability of B-lines count in pulmonary fibrosis, both for diagnosis and for its severity assessment, was reported.<sup>[2]</sup> Hasan *et al.*,<sup>[1]</sup> have the novel aim of evaluating if the distance between each two couple of adjacent B-lines, measured and expressed in milliliters, has any relationship with pulmonary involvement at HRCT; this was evaluated by a merged “severity score”, concurrently with an “extension score”. The conclusion is clear-cut: “The distance between each of the two adjacent B-lines correlated with the severity of the disease on chest HRCT where B3 (the distance was 3 mm) correlated with ground glass opacity and B7 (the distance was 7 mm) correlated with extensive fibrosis and honeycombing”. Authors appropriately acknowledge some limitation of their study, which, in our opinion, is also limited by the lack of intra- and inter-observer analyses, of day-to-day reproducibility analysis and of the search of the optimal cutoff point by receiver operating characteristic (ROC) curve analysis. Also, the use of Pearson’s correlation test appears to be not fully appropriate, since the measures of “distance between each couple of two adjacent B-lines, even measured and expressed in millimeters”, are conceivably very approximate. We usually find, looking at the screen that the horizontal movements of B-lines and their divergence, i.e. the distance between two lines, is greater if measured more distally: We request the authors<sup>[1]</sup> to define the site of measurement. These limitations are similar to those that cause unreliability of B-lines measure and counts in the assessment of the so-called interstitial syndrome, a gross and questionable definition of water replenishment of lung interstitium in congestive heart failure and pulmonary edema, which are reported to have moderate-low levels of quality of evidence (B-C). This means “that further research is likely to have an important impact on

our confidence in the estimate of effect or accuracy and may change the estimate, or that further research is very likely to have an important impact on our confidence in the estimate of effect or accuracy and is likely to change the estimate. Any estimate of effect or accuracy is very uncertain (very low).<sup>[3-5]</sup> We find that morphological imaging of pleural-subpleural lung nodules or thickening of pleural line by TUS is a more rewarding way for a reproducible assessment of pulmonary fibrosis severity, as it is recognized.<sup>[2]</sup> More important, however, is that Hasan *et al.*,<sup>[1]</sup> point adequately to the non-specific meaning of B-lines, which can be found equally in lung congestion and in pulmonary fibrosis: The help of physical examination and of chest x-rays are required in these cases. To rely exclusively on B-lines for the differential diagnosis of dyspnea in patients who suffer from interstitial disease (acute or chronic), lung congestion and other conditions is hazardous, not only in emergency, but also in the case of possible hasty and inappropriate therapeutic decisions.

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### References

1. Hasan AA, Makhlof HA. B-lines: Transthoracic chest ultrasound signs useful in assessment of interstitial lung diseases. *Ann Thorac Med* 2014;9:99-103.
2. Sperandeo M, Varriale A, Sperandeo G, Filabozzi P, Piattelli ML, Carnevale V, *et al.* Transthoracic ultrasound in the evaluation of pulmonary fibrosis: Our experience. *Ultrasound Med Biol* 2009;35:723-9.
3. Trovato GM, Sperandeo M. Sounds, ultrasounds, and artifacts: Which clinical role for lung imaging? *Am J Respir Crit Care Med* 2013;187:780-1.
4. Trovato GM, Rollo VC, Martines GF, Catalano D, Trovato FM, Sperandeo M. Thoracic ultrasound in the differential diagnosis of severe dyspnea: A reappraisal. *Int J Cardiol* 2013;167:1081-3.
5. Trovato GM, Catalano D, Martines GF, Sperandeo M. Is it time to measure lung water by ultrasound? *Intensive Care Med* 2013;39:1662.

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