



## LETTERS TO THE EDITOR

### Lung ultrasound and echocardiography: A useful duet

### Ecografía pulmonar y ecocardiografía: un dúo útil

Dear Editor,

I read the thoroughly written article of Suárez et al. regarding the evaluation of diastolic function and dysfunction in the critically ill patient.<sup>1</sup> Intensivists will greatly benefit from applying these concepts to the individual patient at the bedside.

From a practical perspective, it is interesting to note that evaluating the diastolic dysfunction or, in clearer words based on clinical importance, determining the elevation of left ventricle filling pressures (left atrial pressure in practice), many times involve many gray or confounding circumstances that preclude its correct diagnosis. For example, this is the case for young patients with supernormal mitral inflow patterns, normal LA volumes despite high LV filling pressures as seen in some patients, acute or chronic severe mitral or aortic valvulopathy, tachyarrhythmia and bradyarrhythmia, improper insonation windows or an incorrect technique, just to mention the most common scenarios.

In all cases, integrating the lung ultrasound to the echocardiogram to complete the evaluation of filling pressures needs to be considered.<sup>2</sup> This is simply based on determining the presence and amount of B lines as an indicator of extravascular lung water status (lung edema) and pleural effusions as an indicator of sodium and water retention (hypervolemia). This does not require sophisticated software or a prolonged learning curve<sup>3</sup> and is performed in a few minutes with the same phased-array transducer and the preset values used when performing the echocardiogram.<sup>2</sup> Besides adding data regarding the status of filling pressures, this is also really interesting when planning therapeutic approaches. For example, a patient with pleural effusions and diffuse B lines in context of high filling pressures is best managed adding diuretics to treatment in contrast to the typical patient with acute hypertensive cardiogenic pulmonary edema crisis, that most of the times is not hypervolemic (e.g. usually lacks pleural effusions) and is predominantly best managed with afterload reduction such as nitrates and/or positive pressure ventilation. This

concept can also be applied to a tailored approach of the ultrafiltration volumes in critically ill patients undergoing hemodialysis, reducing or increasing volumes based on the degree of B lines and pleural effusions. In other cases, such as septic patients, when filling pressures are in doubt through transthoracic echocardiogram and predicting fluid responsiveness is not clear (as usually happens in the trenches), the variation in the number of B lines after a mini-fluid challenge is a useful bedside parameter to guide further fluid therapy.<sup>4</sup>

Although B lines and pleural effusions are also seen in pure non-cardiogenic pulmonary edema (i.e. low or normal LV filling pressures) as well as in other conditions such as interstitial lung diseases, their presence, correlating with the whole clinical picture and a focused echocardiogram, allows for the practical intensivist to approach the diagnosis and treatment of filling pressures easily and more accurately.

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### References

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