Letter by Lancaster et al Regarding Article, “Tissue Doppler Imaging in the Estimation of Intracardiac Filling Pressure in Decompensated Patients With Advanced Systolic Heart Failure”

To the Editor:

The echo Doppler–derived ratio of early transmitral velocity to tissue Doppler mitral annular early diastolic velocity (E/Ea) has recently become an accepted noninvasive method to estimate left ventricular (LV) diastolic pressures for a variety of clinical conditions.1 However, the reliability of this measurement in patients with decompensated heart failure has been questioned in the article by Mullens et al.2 Their study compared pulmonary capillary wedge pressure (PCWP) to E/Ea in consecutive patients with symptomatic heart failure in intensive care and found a poor correlation.

We have several concerns with this article. Although the echo Doppler parameters were well described, the authors do not discuss how the PCWP was measured (using an automated or manual system) or whether the PCWP was a mean (which presumably includes systole and diastole) or a diastolic pressure. This distinction is important because 22% of the patients have more than moderate mitral regurgitation, which may increase an average PCWP without necessarily increasing LV diastolic pressures. In addition, although the authors indicate a nonsignificant trend toward a higher PCWP and a higher mitral E/Ea ratio in patients with more severe mitral regurgitation, they do not analyze these patients separately. It may be that the patients with a significantly higher PCWP than E/Ea have more mitral regurgitation.

Similarly, patients with atrial fibrillation were included but not tracked separately. This omission is problematic because, with current echo Doppler equipment, E and Ea cannot be measured simultaneously, and so the E/Ea ratio may be unreliable.

Finally, we have concerns about using PCWP as a “gold standard” for LV filling pressures. The correlation between PCWP and catheter-derived LV diastolic pressures in patients with severe systolic dysfunction has not been well documented. In addition, clinical studies that have used PCWP-directed therapy in these patients have had disappointing outcomes.3,4 Consequently, significant changes have occurred with regard to central catheter use in the treatment of these patients.

E (the velocity of early mitral inflow) and Ea (the velocity of myocardial tissue during early diastolic filling) are direct measurements of hemodynamic/myocardial functions whereas PCWP measures the transmitted pressures from the left ventricle to the left atrium, pulmonary veins, capillaries, and arterioles. Therefore, it could be argued that E/Ea represents a more direct and physiological index of LV function than PCWP.

We believe this article should be viewed in the limited context of the patient population studied and the caveats discussed. We also believe that future studies with E/Ea or other noninvasive measurements (such as TPea) should correlate results to clinical outcomes rather than to PCWP. Only then can we truly know the value of this method.

Disclosures

None.

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