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Echocardiographic Assessment of Left Ventricular Twisting and Untwisting Rate in Normal Subjects by Tissue Doppler and Velocity Vector Imaging: Comparison of Two Methods

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Dear Editor,

I have read "Echocardiographic Assessment of Left Ventricular Twisting and Untwisting Rate in Normal Subjects by Tissue Doppler and Velocity Vector Imaging: Comparison of Two Methods" with great interest and congratulate the authors on their comprehensive and very balanced overview of recent studies on the left ventricular (LV) deformation analysis (1). However, there are three incorrect aspects that in my opinion needs clarification.

Frist, the authors calculated the LV rotation by integrating the rotational velocity, determined from the DTI velocities of the septal and lateral regions, and correcting [R (t)] for the LV radius over time. R (t) is incorrect in Equation 1; it should be improved to:

$$R\left(t\right)=\frac{R_0}{2}+\left\{\int_0^t v_{\mathrm{ant}}\left(t\right)-v_{\mathrm{pos}}\left(t\right)\mathrm{dt}\right\}/2$$

Second, the LV rotational velocity was estimated from the averaged tangential velocity corrected with R (t) . Numerator has not been corrected over time in Equation 2. I would suggest that it could be modified as follows:

$$V_{\mathrm{rot}}\left(t\right)=\frac{\left[v_{\mathrm{lat}}(t)-v_{\mathrm{sep}}(t)\right]}{2R(t)}$$

Third, article by Ojaghi Haghighi et al. states that the unit of the LV rotational velocity is degree/second. However, this is technically incorrect and it should be altered to Rad/second (2).

Finally, even after the application of the three above points in the article, it would still require a fresh statistical analysis and, accordingly, fresh diagrams and/or tables (3, 4).

Torsion angle is one of the biomechanical parameters that have attracted the attention of many researchers recently. The right-handle helix of the inner layer and the left-handle helix of the outer layer cause two torques on the two layers. Torque differences in systole induce counter-clockwise and clockwise rotations in the apical and basal systems, respectively (5). LV torsion meets its peak at the near-end systole and varies with changes in preload, afterload, and contractility; therefore, extraction of the LV torsion is a cornerstone parameter of the systolic function (6). Early strategies in measuring torsion were invasive, such as tracking the motion of metal markers echo are in the preliminary stages in different methods to evaluate left ventricular torsion. LV torsional study not only investigated the changes in the LV myocardial septal wall rotation and torsion in the short-axis view but also the left ventricular twisting is related to myocardial fiber arrangments (6).

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