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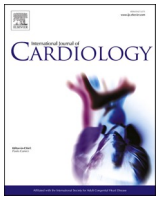

Speckle-tracking echocardiography-derived left ventricular global longitudinal strain – 2D, 3D, manual or automated?

Wang et al. investigated left ventricular global longitudinal strain (LV-GLS) using a novel fully automated method and performed a head-to-head comparison with manual layer-specific LV-GLS and identified a specialized normal reference range for automated LV-GLS. [1] The manuscript is well written, the results are impressive and interesting. Although the discussion section is clearly worded, some comments are needed. With the spread of speckle-tracking echocardiography (STE), the measurement of LV-GLS became part of the daily routine. If we assess LV-GLS using a loop generated in a selected two-dimensional (2D) plane [2], then we are talking about 2D-STE, if using a digitally recorded three-dimensional (3D) echocardiographic dataset, then we are talking about 3D-STE. [3] In the daily routine, we currently still use the 2D-STE-derived LV-GLS, which enables the calculation of even layer-specific parameters. The results from Wang et al. were obtained using only one vendor (i.e. Philips EPIQ7C) and only one post-processing software (i.e. Philips QLAB 13.0). Their results may therefore not be translatable to other vendors. Moreover, the "fully automated" method from Wang et al. in fact still required manual correction of the endocardial border tracking, which will undoubtedly introduce interrater variability. In a recent meta-analysis, normal ranges of 2D-STE-derived LV strains were defined using literature data from 24 studies. It could be stated that normal values of LV-GLS varied from −15.9% to −22.1% (mean −19.7%). [2] In another meta-analysis based on 3D-STE-derived LV-GLS data of 33 studies, normal ranges varied from −15.8% to −23.4% (mean − 19.1%). [3] Such a wide range of strains highlighted significant heterogeneity and inconsistency between studies. Moreover, these analyses also drew attention to the fact that not only the echocardiographic technique (2D vs. 3D), but also the importance of software used for analysis could significantly affect the results. [2,3]. The wide range of normal values for GLS can be a reflection of the lack of gold standard for assessing STE technology, which is important to keep in mind, when interpreting the results from Wang et al. However, the importance of the results published by Wang et al. is that now there is an opportunity for automatic calculation of these parameters in the routine clinical settings. [1] This demand can legitimately arise in the daily routine as it facilitates the measurements. However, the need for specific normal reference ranges for these techniques (2D, 3D, manual, automated) can make the whole analysis more difficult and hinder its spread, despite the fact that automated measurement makes measurements easier. Moreover, with the spread of 3D-STE, the need for the software to measure LV volumes and ejection fraction automatically and with sufficient accuracy following the placement of the transducer on the chest and after performing the appropriate settings at the same time as the measurement of LV-GLS will come to the fore. Hopefully, seeing the technical progress, this can happen soon and this technique can become part of the routine clinical practice.

CRediT authorship contribution statement

Attila Nemes: Writing – original draft, Conceptualization.

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